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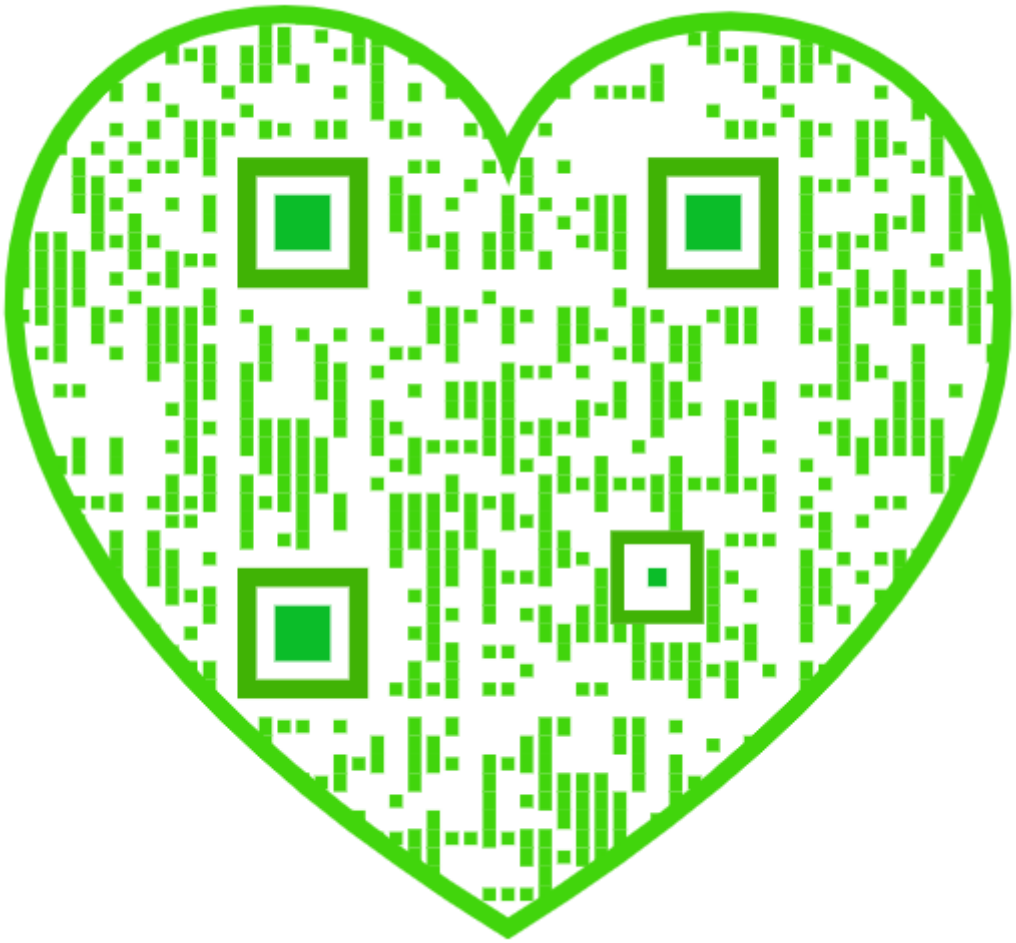

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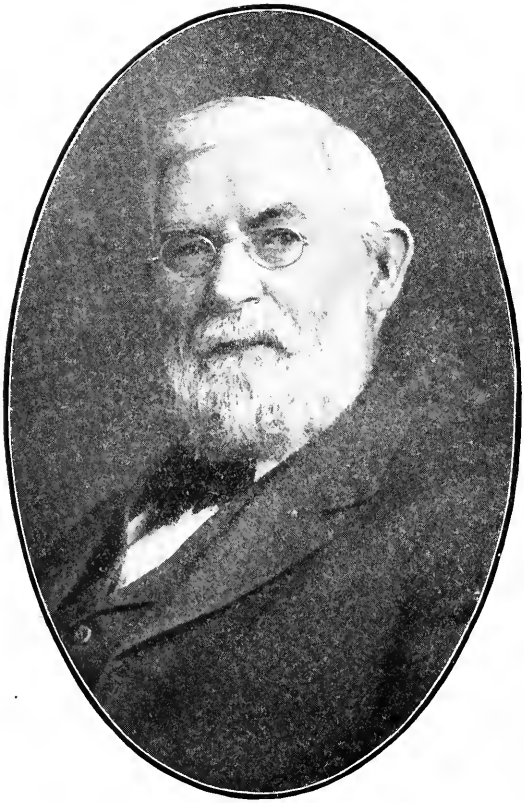

PETER THOMAS GREENE

(1828—1909)

JACOB WESLEY GREENE

(1839—1916)

Gratitude in Memoriam

To the memory of our elder brother and preceptor, the late

Peter Thomas Greene

of New Albany, Indiana, this little work is gratefully dedicated.

Dr. P. T. first recognized the practical advantage of the shallow-tray non-tissue-straining principle in impression-taking, and was the first to introduce it.

He was an ardent worker in the early evolution of what since has been developed into the present established Greene Brothers' Advance-Test System of Plate-work.

To his helpful, courageous persistency, in the face of ignorance, suspicion, jealousy, and envy (difficulties especially attending old-fashioned secret teaching), the new System owes its founding; and progressive plate-workers owe, and will duly bestow, their sincere gratitude.

Our brother began life near Corydon, Harrison County, Indiana, in 1828, and departed from his earthly home in New Albany, to the many loved ones of his youth and later years, *on the other side,* in February, 1909.

He served industriously in his calling, as a progressive worker and instructor, over half a century.

JACOB W. GREENE.

Chillicothe, Mo., July 1, 1910.

FOURTH EDITION, REVISED 1916

GREENE BROTHERS'
CLINICAL COURSE
IN
DENTAL PROSTHESIS
IN THREE PRINTED LECTURES

NEW AND ADVANCED-TEST METHODS

In Impression, Articulation, Occlusion,
Roofless Dentures, Refits and Renewals

BY

JACOB W. GREENE

Chillicothe, Mo.

Author of "Dental Information for the people" —1870. $1.00
Patentee of Greene's Ready-Made Metal Models—1908
Inventor of Greene's Removable-Handle Impression and Bite Tray—1910
Inventor of Weighted Lower Bite-Plate; Tongue Rest Flanges ("Jokers") for Lower Dentures; Real Anatomical Bites for difficult Cases; Greene's Pressometer, for Measuring Stress, in Bites: Short-Cut and Quick-Step Methods in Plate-Work, and Greene's Occlusion Retainer to Do Away With All After-Grinding and Greene's Metal Roof Reinforcer to Prevent Extra Thickness of Plates.
Inventor of Occlusal Impression.

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By Jacob W. Greene
Chillicothe, Mo.

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By Detroit Dental Manufacturing Co.
Detroit, Mich.

PUBLISHED BY

DETROIT DENTAL MANUFACTURING CO.

DETROIT, MICHIGAN

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CONTENTS

LECTURE I.

Upper Mouth Only.—Reasons for Improved Methods.—Old Ways Unreliable and Why.—Test Impressions.—Impressions of All Sorts of Mouths.—All Kinds of Impression Materials—Plaster, Modeling Composition, Bee's-Wax, and Combinations of Them.—All About Roofless Plates, Re-fits, and Renewals from Old Plates, by the Greene Test Methods.—Short-cut and Quick-step Upper Plates.—Unreliability of Plaster Models and How They Cause Failures.—Instructions in Use of the Greene Nonchangeable, Ready-made Metal Models in Vulcanizing and Swaging.—And so forth.

LECTURE II.

Lower Mouth Only.—Principles and Methods of First Lecture, as Applied to Lower Cases; with Others Special to the Lower.—Partial Impressions with Leaning Teeth and Bell-shaped Crowns.—Why Lower Dentures Are So Generally Unsatisfactory and How to Correct the Difficulties; by Muscle-trimming, Conforming, Shot-weighting and Tongue-power and Water-seal Methods, and Consequent Suction.—And so on.

LECTURE III.

The Bite, and All that follows, to the Finished Case.—Only the Tired-rest Position of the Jaws Reliable.—The "No-bite" Gives this Position.—How to Take It and Test It.—Bite Must Give Four Essential Points.—(*a*) The Show-length of the Teeth; (*b*) Their In-and-Out Standing; (*c*) Their Occlusion; and (*d*) The Strain on the Tissues.—A Simple Pressometer.—Bites for Lower Partials and All About Them.—Some Old Troublesome Problems Solved.—Brand-new Occlusion Scheme for Difficult, "Crippled" Cases.—Each Mouth Its Own Automatic Articulator in the Finis.—Occlusal Impression.—Ethics in Plate-work.—Interesting and Instructive Lecture to Patient Before Dismissal—*And much more.*

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CAPTIONS AND SUB-HEADINGS

INDICATING THEMES AND METHODS

LECTURE NUMBER ONE

UPPER DENTURES.

	PAGE
Alveolar Ridge with Hard Roof, Soft, Flabby	55
Approximately, Trim it	26
Back Palate, Conform ("Post Dam")	39
Bell Shaped Crowns and Leaning Teeth	63
Centre-Test, Suppose it Doesn't	26
Class Close Around the Table	11
Class Student as Patient	11
Correct Roof to Test Fit	30
Correct the Rim to Muscles	32
Conform Compound to Soft Parts	36
Conform ("Post Dam") Back Palate	39
Coring, Recapitulation on	65
Denture, A Quick-Step	75
Details, Uniting	42
First Hour of First Three-Hour Lesson	12
Fit Tray to Mouth	17
Fitting Tray, Two Ways of	18
Fitted Metal Tray, The	20
Flabby Gums in Front and Hard on Sides	58
Impression, What We Want to Do in Taking An	13
Impression, An Approximate, Correctable	16
Impression, Now Take Your Correctable	22
Impression, Two Methods of Taking Correctable	22
Impression, Students' Correctable	22
Impression, Practitioners' Approximate	23
Impression, Trim it Approximately	26
Impression, To Get Length of	28-29
Impression, Pass-Word "The Perfection Compound	32
Impression, Test the Completed	43
Impression, Swallows Down, If	45
Impression, Modeling Compound, Old and New Way	

PAGE
Illustrated, Figures 4 and 5 46
Impression, Change, Don't Let 50
Impression, In Difficult Cases, Modeling Compound .. 54
Impression, Partial Upper 63
Impression, For Partial Plates, Plaster 65
Impression, To Test a Plaster 68
Impression, In Modeling Compound Trays, Plaster ... 69
Impression, In Plaster, To Take Test 70
Impression, Plaster, Pass Word for Greene Method of 72
Impression, Why Plaster at all 74
Impressions, Two Upper Plaster (Illustrated) 76
Instructions to Patients 62
Lesson, First Hour of First Three-Hour 12
Length of Plate in Soft Mouth, To Get 28
Length of Plate Over a Hard Palate, To Find 29
Length of Plate and Conform (Post Dam) Back Palate, To Get Proper 39
Leaning Teeth and Bell Shaped Crowns 64
Mercurial-Tin Paste for Removing Tin-Foil from Vulcanite Plates 83
Model on Tested Impression, Make 47
Model, How to Make the 49
Model, From Impression, To Separate 50
Model, Metal V S Plaster 51
Model, System, Greene's Non-Changeable 52
Model, In Refits, The Greene Ready-Made 87
Modeling Compound, The Essential Art of Handling 42
Modeling Compound Impressions in Difficult Cases ... 54
Muscles, Correct the Rim to 32
Muscle-Trimming or Very Edging 33
Muscles, To Especially Fit Particular 34
Nausea, About 45
Pass-Word, *Relief-Without-Leak,* The Modeling Compound Impression 32
Patients, Instructions to 62
Plaster, Impressions for Partial Plates 65
Plaster, Impression, To Test a 68
Plaster, Impression in Modeling Compound Trays ... 69
Plaster, To Take Test Impression in 70
Plaster Impression, Pass-Word for Greene Method of 72
Plates in Soft Mouth, To Get Length of 28
Plate Over Hard Palate, To Find Length of 29
Plates, Refitting of 78
Plates, Roofless 60
Plates, Extra Support of Roofless 62

PAGE
Plates From Old Ones, To Reproduce New..... 83
Plates, Precaution in Refitting and Renewing..... 87
"Quick-Step" Denture, A..... 75
Refitting of Plates..... 79
Refitting and Renewing Plates, Precaution in..... 87
Refits with Perfection Compound Wafers, Temporary 79
Refits with Vulcanite, Permanent..... 80
Refit with Plaster Impression by the Pass-Word Method, To..... 84
Refit of Rubber Plates, Common Old Fashioned..... 84
Refits, The Greene Ready-Made Models in..... 87
Relief-Without-Leak, The Modeling Compound Impression Pass-Word..... 32
Review, A Valuable..... 59
Roofless Plates 60
Roofless Plates, Extra Supports to..... 62
Roofless Plates, Retention of..... 63
Soft Part, Conform Compound to..... 36
Soft, Flabby Alveolar Ridge with Hard Roof..... 55
Soft, Gums, Vienna Paste for Reducing..... 56
Soft, Gums, Dr. Sass's Formula for Reducing..... 56
Step, First 23
Step, Second 26
Step, Third 30
Step, Fourth 32
Step, Fifth 36
Step, Sixth 39
Students' Reference, Printed Notes for..... 9
Teeth From Old Plates, Remove..... 86
Test for Fit, Practitioners' Partial..... 25
Test, Suppose it Doesn't Centre..... 26
Test-Fit, Correct Roof to..... 30
Tissues Must Move Air-Tight, All Moving..... 16
Tray to Mouth, Fit..... 17
Tray, Two Ways of Fitting..... 18
Tray, The Fitted Metal..... 20
Trays, Illustrated, Upper—Old and New..... 21
Tracing on Modeling Compound with Kerr Tracing Sticks 17
Uniting Details..... 42
Very-Edging or Muscle-Trimming..... 33

CAPTIONS AND SUB-HEADINGS

INDICATING THEMES AND METHODS.

LECTURE NUMBER TWO

LOWER DENTURES

PAGE

Correctable Impression, Take a..... 96
Correctable Impression, Practitioners—Step No. 1... 98
Coring Out for Undercut Impressions.....118
Cast Aluminum Plates.....133
Cast Plates in Place of Vulcanite or Celluloid, Substitution of Heavy.....134
Dentures, Weight in Lower.....130
Impression in Detail, A Modeling Compound..... 89
Impression, Take a Correctable..... 96
Impression, Practitioners' Correctable—Step No. 1.. 98
Impression, Step No. 2 in Lower.....103
Impression, Step No. 3 in Lower.....104
Impression, Step No. 4 in Lower.....105
Impression, Step No. 5 in Lower.....106
Impression, Step No. 6 in Lower.....107
Impression, Step No. 7 in Lower.....109
Impression, Step No. 8 in Lower.....110
Impression, Step No. 9 in Lower.....111
Impression, Step No. 10 in Lower.....112
Impression, A Plaster Lower.....113
Impression, Partial Lower.....115
Impression with Leaning Teeth and Bell-Shaped Crowns, Modeling Compound.....117
Impressions, Coring Out for Under-Cut.....118
Impressions, Old Time Improvements in All-Plaster

PAGE
Lower 120
Impressions Illustrated, Old Way and New Way, Modeling Compound, Figures 13-14-15 123
Lower Trays, Typical, Old and New, Figures 10-11-12 95
Lower Impression, Partial 115
Muscles, To Avoid Straining the 93
Plaster Lower Impression, A 113
Plate, Weight in Lower 130
Plate, To Shot-Weight An Old 131
Plate, To Shot-Weight a New 131
Plate, To Strengthen Lower 132
Plates, Mixed Lower 133
Plates, Swaging Lower 134
Plates, Cast Aluminum 135
Refit a Vulcanite Lower Plate Temporarily, To 124
Refit a Vulcanite Lower Plate Permanently 125
Renewal of Rubber Plates From Old Ones 128
Refitting Lower Metal Plates with Vulcanite 135
Refit or Renew a Cast Plate with the Same Material .. 137
Strengthen Lower Plate, To 132
Swaging Lower Plates 134
Substitution of Watt's Metal Plates in Place of Vulcanite Ones 136
Substitute Vulcanite Plate Instead of Moulded Metal One 137
Substitution, To Refit Floating Rubber of Celluloid Plates by 138
Trays, Typical Lower, Old and New, Figures 10-11-12 95

CAPTIONS AND SUB-HEADINGS

INDICATING THEMES AND METHODS.

LECTURE NUMBER THREE

PAGE

Articulation, Occlusion, Bite, etc., etc.....139
Articulator Important, Firm.....168
Articulator in Most Common Use.....170
Articulator, To Fix Lower Model on.....171
Articulator Improved for Anatomic Work, The Common Old Plain Line.....187
Articulation Again and Further Explained, Class Requests Difficult "Cripple Case".....189
Adjustment, Better Defer Final.....201
Artificial Teeth, Instructions to Wearer of.....202
Articulator, Every Mouth Its Own.....216
Base-Plates 173
Base-Plates, The.....173
Base-Plates, Setting up Teeth on.....174
Bite, Now for the.....144
Bite, Absurdity of a Common Motionary.....145
Bite-Tired Relaxation the Natural Position of the Jaw.146
Bite, What Do We Expect From a.....147
Bite, The "Biscuit" or "Mush" or "Squash".....148
Bite, The Rim.....148
Bite, The Greene Improved and Perfected Rim.....149
Bite for a Full Upper-and-Lower Set.....149
Bite-Plate, Upper Model First.....150
Bite-Plate, for Fullness of Upper Lip and Teeth, Trim 150
Bite-Plate, for Length of Upper Teeth, Trim.....151

PAGE
Bite-Plates, Heavy Lower....152
Bite-Rim for Length of Lower Teeth, Trim Lower..152
Bite-Rim, The Outstanding of the Lower Teeth.....153
Bite-Tired-Rest Test-Bite or "No-Bite".....154
Bite, Re-Inspect No-Bite for Feature Test.....156
Bite, Greene Tired Rest ("No-Bite") Illustrated Figure 16.....156
Bite, Fourth Point, or Pressure Feature, in a.....157
Bite, A Simple, Practical Pressometer.....157
Bite, Unequal Pressure Sometimes Needed in a.....160
Bite, The Third Still-Jaw Test.....163
Bite, Greene Pressometer Illustrated Figure 17.....160
Bites Till They Do Test, Correct.....167
Bite, Importance of Stress.....177
Bite-Rim, Weighted Modeling Compound.....180
Bite, The Lateral or "Sheep-Bite" Movement.....185
Bite Movement, The Forward.....188
Bite, New Way to Take Test No-Bite, in No-Handle Bite-Trays.....192
Bites, Improvement in "Biscuit".....194
Bite, No-Bite in Plain Upper Case.....205
Bite, The Non-Lateral, Minimum Short-Bite, or No-Bite: Described Again.....206
Bite, The Full Upper No-Bite Test.....208
Bite, Transfer No-Bite to Articulator.....209
Bites in Scattering Cases.....210
Bite, Partial Posterior Lower.....211
"Cripple" Mouth Its Own Articulator in the *Finis*, A..165
Fullness of Upper Lip and Teeth, Trim for.....150
Flasking the Case.....194
Grinding Touch, A Still Finer Last.....201
Gum Sections, Pink Rubber and.....210
Jaw, Tired Relaxation the Natural Position of the...146
Joker, Still More About the.....182
Joker, Another Reason for the.....183
Joker a New Idea, The.....184
Length of Upper Teeth, Trim Bite-Plate for.....151

PAGE
Lateral, or Sheep-Bite Movement, The....185
Model First, Upper....150
Mouth Its Own Articulator in the *Finis* Further Described, Each....189
"No-Bite," The Tired-Rest Test-Bite or....154
"No-Bite," for Feature Test, Re-Inspect....156
"No-Bite," Greene Tired-Rest Bite Illustrated, Figure 16....156
"No-Bite," Verifying the....161
No-Bite, Mathematical Test of the....162
No-Bite to the Articulator, Transfer....164
No-Bite, Anatomical Movement on the....165
No-Bite of a Plain Upper Case....205
No-Bite, Described Again, The Non-Lateral Minimum Short-Bite....206
No-Bite Test, The Full Upper....208
No-Bite to Articulator, Transfer the....209
Occlusion, Last Finishing Care in....199
Occlusion, The New Common Sense....216
Occlusion Retainers Illustrated....219
Occlusion Retainers, Greene's....220
Occlusion—Full Double Set....221
Occlusion Shown in Mouth, Common Sense....222
Pressometer, A Simple, Practical....157
Pressometer in a Strain Test, How to Use the Greene..159
Pressometer Illustrated, Greene, Illustrated Figure 17.160
Packing and Vulcanizing....195
Pink Rubber and Gum Sections....210
Pressometer in Upper Cases....211
Quackery, Side Remarks on Prosthetic....179
Rubber Plates, Dishonesty in....198
Teeth in the Mouth, Trying....177
Teeth—Side Remarks—Prosthetic Quackery....175
Trays, New Way to Take Test No-Bite in No-Handle Bite-Trays....192
Teeth, Instructions to Wearer of Artificial....202
Vulcanizing, Packing and....195
Vulcanize, How to....196

GREENE BROTHERS' CLINIC LECTURE COURSE IN PLATE-WORK.

WHY IN PRINT.

While this Course is limited to plate-work, it embraces most of the important points in that specialty; and on lines of original, new and improved methods. Also it is more particularly meant for vulcanite and similar work; of which probably 90 per cent. of all plates are now made.

It is given as a private course of instruction for practical utility, and more especially for active practitioners.

No *"honors"* are offered, save that for *improvement* in this most difficult and uncertain branch of dentistry.

Yet in self-defense, against deception and fraudulent pretensions, we give our certificate to show one has taken our Course directly from central authority.

Though we have been instructing more or less from the incipiency of the work fifteen years ago, when we gave but an hour (then mostly on impressions), up through its development to an eight to ten-hour Course, we have not been giving it publicity till 1907.

So there are yet but a few schools that have it familiar enough to enable its thorough teaching to inexperienced students. From now on we expect to give it to all willing to pay reasonably for our services.

As justification for charging for our time, it is necessary only to mention that we have entirely given up our private practice to devote

our aged efforts to the new *Private Instruction Business* for a livelihood.

About teaching it: After many years' experimentation and gradual development, our practical Course now embraces a *System,* including some *advance test methods,* where the work is exact and technical. Hence, the imparting of it to others is not a little matter to be "told" on the side-walk; nor even well taught at a distance, in hurried, public clinics, by an inexperienced novice.

To our amusement, dentists sometimes tell us they "already know" our methods because someone has "told" them what they are. The fact is: to perfectly *teach* the Greene System (or any other) one must fully understand its basic principles, have expert experience, and be familiar with practical teaching requirements.

To this end our business plan has been to instruct individuals, classes, and local societies, in limited numbers, in their towns and cities; usually by pre-arrangement.

When wanted, we go also to colleges and instruct classes of advanced students, in groups of ten or less.

At no distant time we hope to see many of the plate-work instructors in the schools familiar enough to themselves fully teach their students in the new ways. The trouble is that so many schools employ inexperienced men and boy instructors on glory-pay in this important branch of dentistry.

The need of our Course is fully emphasied when eminent prosthesists publicly assert that "Good, artistic plate-work is fast becoming a lost art."

Years ago, even up into the '80s, a goodly share of most dentists' practice consisted of plate-

work. There was so much of it done, and so comparatively few dentists to do it, that many became experts, even in the old guess-work methods.

So the *average* grade of the out-put was decidedly above that of now-a-times; now, when most of the old "mechanical dentists' are gone, and the young men disdain the "dirty, uncertain work."

And so it is that the once attractive, artistic specialty has been discarded by both the boys and the "best men" *and* turned over to commercial (mal) practice. And such practice obtains to the extent that half the plate-wearers look like silly and vicious ghosts grinning through moonshine.

It was the prideful effort of the old-timers to rather hide art and imitate Nature. So, in the more professional (we called it "mechanical") past, dentists far more seldom allowed patients to dictate, and "pick out teeth to suit themselves"; which they are wont to do with unquestioned commercial license.

Sure enough the old-timers have reason to conclude that "artistic plate-work is fast becoming a lost art." Much of it is being done in "false-tooth factories" by boys who have never studied dentistry at all, and who never get to see the disfigured faces through which their glossy-white pearls must grin - shine so hideously.

How many dentists (commercial proprietors) boastfully tell us: "*I* don't *do* plate-work myself. *I* simply take the impressions and bites and have the main work done." *What a professional conception!*

Two gobs of material—impression and bite—hurriedly thrust into the mouth and jerked out;

then turned over to the laboratory boys and girls, strangers in the case—"sight unseen"!

The "too-busy" dentist (and there are many of them), who can neither do his own plate-work personally nor have it done under his own supervision, giving due study to each case on its own peculiar merits, should turn it over to the *legitimate* specialist, who can handle such important practice consistently and properly.

It is one of the purposes of the Greene Brothers' Course to encourage and train specialists *to* care for this most difficult work of the dental art-science.

For years we have been urged to give our lecture-demonstrations in printed form, and teach our methods in that more convenient and less expensive way. But for several reasons we have refrained from doing so till now.

We have feared the difficulty of teaching fine points in art by mail. We feared failures might bring our System into disrepute before fully established, and ruin at least our business.

But now we feel differently. After a mid-teen years of persistent work, and since we have reached national attention by publicly lecturing and demonstrating to local and State and National meetings, with fully satisfactory reception, we are persuaded to yield.

Since we have the backing of thousands of testimonials of satisfaction and earnest recommendations from our student practitioners of all classes and grades in half of the States in the Union, we no longer fear that a few possible failures to understand, or a few technical criticisms, or even kickers, would seriously harm our "traveling dental school."

Then, as there is but one of us left and as

he is doing business on borrowed time (this 1910), we have consented to this publication.

In so doing we have first in mind those who have taken, or may take, our Course from us in our regular way, but who may not have caught onto, or may not catch onto, all of our numerous new pointers; also those who may have forgotten, or may forget, some of them before opportunity for practice.

To such the *printed* Course can't fail to prove a most valuable reference; even though in it we have abridged many of our verbal repetitions and cut out some of our odd but convincing illustrations, used in the lecture-work.

Second, we have in mind the thousands who will have their attention called to our work, but could never get it from the central source in any other way than this.

I might add that, though a student of our methods through these *printed* lectures will unfortunately miss the inspiration of personality that always goes with all verbal teaching (and to which, maybe, too much is sometimes accredited in our class-talks), he will nevertheless get our most important inventions, discoveries and new practical pointers, if he will *think*.

We have tried to be clear and comprehensive, and hence, in some sense, to some readers, may be uselessly detailing.

To steer clear of literary pretense, when I know I 'm not "in it," I have herein held much to the colloquial and self-idiomatic of my *verbal* Course.

Having scratched all this out from stenographic notes, taken from my offhand talks in class-work, I may have edited carelessly, if not ignorantly, as to elegance of diction. With my sole aim to eliminate some of the guess-work and

uncertainty from "mechanical dentistry" and to help restore the "lost art," I may have thought (maybe known) less of rhetoric than of work.

Maybe I should apologize for even worse—for coining some non-dictionarial vocabulary. Well, that's been done before; otherwise we 'd have no "occlusion," nor "articulation," applicable to artificial teeth. Pardon my independence.

If, with all my acknowledged shortcomings, I have been helpful, in a measure, to the working dentists and to the wearers of artificial teeth, my purpose has been attained and my chronic ambition gratified.

JACOB W. GREENE.

CRITICS, DON'T!

"Oh, that mine enemy would write a book!"

DON'T imagine this a text-book, please. It 's merely a series of offhand, "show-me" talks in print; by an old-and-childish "tooth-dentist"—three-score-and-ten, ten more, and then some.

DON'T tantalize while I weep for its literary weakness! It was: Write *this,* or keep on talking—three to six hours a day. I 'm tired.

DON'T criticise my repetition. I 've learned that most dentists need the like in their studies.

DON'T object to this mail Course. My "itinerant dental school" is getting too old to *trek.*

DON'T wink-smile at my impromptu vocabulary. It 's the answer to my prayer for inspiration, meet for the occasion.

DON'T accuse me of competition with (other) dental colleges. I 'm only setting up and finishing their goods, shipped out in the knock-down.

DON'T blame me for not having my subthemes and pointers in more systematic order. I was incarnated in Old Hoosier, in the early

days, in the woods, among the whoo=owls, on Friday night, in the dark of the moon, out of order, against my better judgment.

DON'T accuse me of egotism. I 'm unassuming. I 'm patient. I can listen by the hour to dentists repeating how *they* do things (by the old guess=ways).

DON'T, above all, criticise because *you* can't understand me. "The carnal (dento=carnal) mind cannot discern spiritual (dento=spiritual) things."

J. W. G.

INTRODUCTORY.

While the G r e e n e Brothers' Prosthetic Course is limited to plate=work, it takes in about all of that much=neglected branch; and along new lines and advance test methods.

By *test methods* we mean such as enable us to know by actual test *in advance* what the resultant outcome will be.

To illustrate my meaning I will suppose you have, for instance, a plate that exactly suits you and its wearer. If you should mold and duplicate another one from it, you would know, in advance, just how the new one would be. Bear in mind, I say, if you *duplicate* the tested plate.

Now, it is proposed to give you a whole course, amounting to a *System,* of advance=test plate=work methods, covering about all of the important points in the specialty.

THREE SEPARATE LECTURES.

The Course is generally given in three separate clinic lecture=demonstrations, wherein the principles are taught by reason and analogy, and the application by "showing" (from Missouri).

Incidentally it becomes necessary to show, likewise by reason and application, that some, and not a few, of the old and commonly used methods are not only defective and faulty, but absolutely erroneous and absurd.

Sometimes it becomes necessary to show the defection of an old road bridge, and to remove it before substituting a better one in its place. And again sometimes it 's best to remove the old structure by section and piece and substitute corresponding parts of the new one, working the old and new in together, into one reconstruction.

OUR SYSTEM A GENERAL RECONSTRUCTION.

In a comprehensive sense the Greene Brothers' System is a reconstruction of plate-work methods.

If in plate-work the impressions and models and "bites" and the like can be compared to the abutments and pillars and arches of a railroad bridge, our method may be taken as a somewhat radical departure reconstruction.

I hope to make these truths appear plain as I proceed systematically in my analogies and practical demonstrations.

THE FIRST SECTION, OR "DEGREE."

The first *one* of the three sections of our Course, here to be considered, pertains to the *upper mouth only.* And here I 'll mention, as an indicating prelude, the *leading* subjects to be dealt with in this lesson; the minor ones to come in at opportune times and places, as we proceed.

First—TEST IMPRESSION; full and partial; in all types of cases, easy and difficult ones; with all the different sorts of materials in common use, as

modeling composition, plaster, bee's-wax, and combinations of them.

Second—The whole matter of roofless dentures, in clear mouths and also over "anchors" (worn-off teeth); and partial cases.

Third—Test-methods of refitting plates, both temporarily or permanently; and renewing, or duplicating, new ones from old ones, still maintaining occlusion and position of teeth, or changing the same if desired.

Fourth—The making of dentures by short-cut, quick methods, whereby a fast worker can make a perfectly fitting (*pre-tested*) plate of moulded metal, vulcanite, or celluloid, in from two-and-half to three hours, from start to finish.

These and more are included in our first section, or "degree,' of the three of our Course.

However, in case of large classes we sometimes divide these sections so as to give the full Course in four or more lessons, as may mutually suit our time and convenience, sometimes to accommodate larger classes.

PRINTED NOTES FOR STUDENTS.

We have here printed notes on the leading and more important points; one list of them for each of the three sections, or lectures.

Each individual of the class is entitled to these slips, which notes will be explained by me, in detail, in the clinic, and then read aloud immediately following by someone of the class.

The demonstration and the reading together will impress the points on your minds, and the preserved notes will be your references in the future, if necessary.*

After the reading of each note any member of the class can ask for any further explanation

*This printed work will now supplant the note references.

he desires on the points gone over. But we 'll have no time to listen to *criticisms,* discussions, nor to how *you,* or others, do these things, until the lecture is over.

But I do *want* you to ask pertinent questions, and even ask for repetitions until you fully understand each point; *then* you 'll probably have no criticisms to offer.

Should you ask questions out of time and place, which eagerly interested students are apt to do, I will then inform you that the answer will come in later, in its order.

At the close of each lecture we'll review, if desired; and then again at the close of the Course. I am no less desirous that you fully catch-on than you yourselves are; for I live wholly by what my students say of me and of my work.

As an incentive to my effort to please and to benefit I expect to earn, and seldom ever fail to *get,* the best recommendation my students can write. (And I 'll mention by way of parenthesis I have over a thousand such testimonials, on their own letter-heads, that I "point to with pride." Scores of these, as some of you have seen, are from the "best men" of highest national standing.) †

†Now, 1915, about 3,000.

LECTURE NUMBER ONE.

(Class close around the table.)

Doctors: You will now all come up close enough to the clinic table to not only *hear* my whys, but see *what* I do, and distinctly *how* I do things. For some of the points I will make are as "fine" as anything you do at your operating-chair, or with your blow-pipe. And some things here must be done almost as quickly as a snap-shot negative is taken.

But now don't get scared at this statement, for I 'm not going to require of you anything more difficult, or more particular, than many things you do in almost every other operation you perform. But I *shall* require of you the same pains and exactness of manipulation in plate-work that you exercise, for nicety and success, in other branches.

The patient who pays your fee for a set of teeth is just as much entitled to the best you can do as the one who pays you for a fine crown, bridge or filling. (Pardon my digression off into professional ethics—you are my patients for the time.) Before we get through the course, you 'll concede I owe no apology for these last suggestive remarks.

A CLASS STUDENT AS PATIENT.

I will now need one of you with a liberal mouth and no mustache, at my left side, whom I 'll honor as "Madam."

Now, Madam, I want you to *see* me wash my hands and scrub my nails with clean water, soap and a brush, before they go into your mouth. As

a nice madam, of course, you have no disagreeable oral habit!

Now, Madam Jones, while *you* will be my *main* patient, I'll have an eye single, and a different finger, for the mouths of the rest of the class, opportunely. (A spontaneous *labi-lingua* crusade against the "weed" all around.)

You can all best realize these touches *first* in your own mouths; later on, for practice, in the hospitable mouths of your mothers-in-law.

FIRST HOUR OF FIRST LESSON.

I will mention here that the *first* hour of this three-hour lesson is spent in the general manipulation and improved methods of handling and working modeling composition, in taking impression; first in full cases, and then in partial ones—easy and difficult ones included.

Strange and unreasonable as it may seem, the very inventors of modeling impression material don't conceive of its real possibilities; hence, I may add, only a few produce an article *with* needed possibilities.

Usually it is condemned by the "best men"; and well it may be, *as a whole,* if worked by the old methods in common practice. Nine-tenths of all "brands" are faulty, even by the improved methods; and all of them practically worthless by the old ways, and in the common spread-mouth trays—excepting in simple and easy cases.

But with the right material, used in the right handling, composition material is not only the best material, but about all that could be desired. If this sounds "fishy," just wait and see!

With it we can take an approximate, or "cor-

rectable," impression, and adapt and conform it *in detail* to the different tissues and muscles of the mouth, both stationary and movable, until each place is fitted and tested to a certainty of correctness.

And then as a finished, completed result we can absolutely test as to its fit *as a whole* under the practical movements of the mouth generally; and then easily duplicate a denture from it that must stand the movements the tested impression stood.

That is to say: if in a modeling-compound impression we find that any muscular movement will throw it down, or up, we can change and correct it, when we know how, even to chewing on it.

Really, however, it makes little difference of what material an impression is made, just so it stands the test of the movements. The practical question is: What material can be made to conform to the moving muscles, giving them room to move in freely, and yet press with valve-like tightness, giving *relief without leak?*

These are the essential qualities of any material for *test* impressions; we trust no others.

Now, it is for me to show you what should be done, how to do it, and what to do it with.

WHAT WE WANT TO DO IN TAKING AN IMPRESSION.

In taking an impression, the main three points to be attained are: (*a*) the correct height and length of the expectant plate; (*b*) about an equal strain on the stationary hard and the soft parts of the covered mouth, at about the pressure it is to be worn; then (*c*) room for the *movable* parts to move in and still be valve-

like tight. That is to say, again, relief=without=leak in muscular motion.

If taken at a much harder pressure than the plate is to be worn, the tissues will be distorted, and, of course, the plate will not fit when the parts are not strained, but must come back to their normal position. It looks like everybody ought to think of this, but only a remarkably few do.

Let me close my left hand and call the back part of it, including my knuckles, a mouth, with hard and soft parts. The knuckles are the hard parts and *between* the knuckles the soft parts.

Now, contrary to the general teaching, you always get the impression of the *hard,* stationary parts right. No matter what material you use or pressure you give, you get the impression of the hard parts about right—right in proportion to their *solidity.*

You think your plates rest too hard on the hard parts, and are told to scrape them there and "relieve" them. *Absurd,* for they are right, in proportion to the hardness under them.

If anything is wrong, it is on the soft parts, or else the *movable* hard parts; which exception we 'll consider in a few minutes.

See me press with my right index finger between the knuckles on my left fist. The tissue is soft and it yields. Just so do the soft parts in the mouth give when you take an impression, with either modeling compound or thick plaster. But the knuckles don't yield—excepting that of the left little finger.

Now for the impression, supposing it to be of my hand. To get it correct we must make this soft tissue yield just enough to give us a

pressure about equal with that on the knuckles, at fully the strain the denture is to be worn.

If we press too hard on the soft parts and strain them *too* much, they will rebound when we cease the pressure, and will lift the impression (or plate) off the hard parts; in which case there would be air under it, over the hard parts. And, of course, the air there would, to some extent, offset and neutralize the air pressure from the opposite (upper) side. In other words, our "suction" (atmospheric weight) would be lessened.

But, on the other hand, if we press too *lightly* on the soft parts and don't make them give any at all, the impression (or plate) will rest so loosely on them as to admit of air *there;* and again we 'd have lessened atmospheric pressure.

Atmospheric pressure and "suction" are synonymous terms. Whenever there is any air under a plate, however rarefied it may be, the "sticktion" will be lessened accordingly.

So, when you don't press the soft parts up with enough strain, you say your plate rests too hard on the hard places. This isn't exactly true—only relatively true, since the bearing is correct on the hard parts, and lacking elsewhere.

"Perfect adaptation" means a similar strain on the hard and soft places; but *atmospheric pressure,* or "suction," is what holds an upper plate to its place—unless clasps or other clap-trap means are used.*

I 'll merely remark here, a little prematurely, that I 'll show you later on in this lesson that it takes surprisingly little "suction" to

*The Gillmore attachment is an excellent help when substantial snags are left in.

hold a plate up if it has no strain to throw it loose.

But equalized strain on the hard and soft parts isn't all, nor even the most important thing, to be obtained in this matter. We have movable parts—muscles and tissues—that must be accommodated, as you here see on and around my little finger's moving knuckle, as I tighten and loosen my hand's grip, for instance.

Now, in a plate, and consequently in our impression, we must provide for this movement; or it will lift it up, if a lower one, or work it loose, if an upper one.

This is usually done (old way), or rather attempted to be done, by scraping the plate after it is made; or by trimming the impression with a knife—both by guess.

The moving muscle, or other moving part, must not only have room to move in, but it must move, as we say, valve-tight, air-tight. Otherwise air will get under it, and away goes your "suction," your atmospheric hold.

ALL MOVING TISSUES MUST MOVE AIR-TIGHT.

Now, doctors, get yourselves fully impressed with this essential fact in plate-work. But who can file and scrape impressions, models, and plates, so a muscle can work freely and yet be air-tight? Or, as we say, valve-tight, similar to a piston in a tube syringe?

"Guess-work is as good as any when it hits." But how many can guess out, or guess off, room for a straining muscle to move with valve-tight pressure? Only the experienced few, and then only in easy cases.

We have a way of making this air-tight working room without file or scraper; and, too, without guessing.

This is done by a method of muscle-trimming, soon now to be demonstrated, in this lesson.

AN APPROXIMATE, CORRECTABLE IMPRESSION.

We first take an approximate, "correctable" impression; which is but a modeling-compound tray within a metallic tray. By "correctable" I mean one that has none of the metal tray in sight.

Then we transform this correctable impression, or tray, into an accurately fitting *test* impression; at some detail when necessary—seldom.

FIT METAL TRAY TO THE MOUTH.

To avoid straining the tissues and distorting the mouth to be covered, we use only shallow, or low-rimmed, metal trays—never deep ones.†

These trays are always lower on rim and shorter in length than our finished plate is to be; and never steep in the roof, lest we strain the back palate with metal and then lack material for correcting the strain.

Our metal trays are low, also, in order that we may not strain the lip-and-cheek tissues; and further that we may have material above the rim which can be reduced or extended in transforming the modeling-composition tray into an impression.

Should you ever need a deeper metal tray (very seldom), you can trace-on an edge of modeling compound from a round stick of the same material as the impression, heated over a spirit lamp—here shown.

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†Trimmed fitted trays, first taught in 1890 by Dr. P. T. Greene.

This traced-on rim is hard when you want it hard and will be soft when so needed. Formerly I used common sealing-wax to build up the edges of my metal trays; but these (Kerr's "Perfection"*) sticks are better, from the fact that these rims become a part of the finished impression.

TWO WAYS TO FIT TRAY.

For this we have two methods: the student's method and the practitioner's method. I 'll first give you the student's way. It is to first take a common, hurried impression "any old way," and make a hurried model from it; and then fit a tray to this approximate model, instead of fitting it to the mouth itself; the latter being the practitioner's method.

The student's method is, in fact, a good one for even the most experienced, who are willing to take a little extra time, say five minutes, to first get this approximate plaster model. Indeed, it is the preferable way, and becomes the settled one with many of my students in practice.

Well, I have a model here before me. We 'll suppose it to have been made by some one of you from a hurried common impression—or, as for that, from a "good" impression ("good," but *untested* and not *known* to be good).

We 'll take an old, soft-metal tray and cut it off at the heel so as to be a little shorter than we think our coming plate should be, judging from the model; and then we 'll trim it down at the sides and in front, so as not to be quite as high as we think our plate should be.

We 'll thus make it seemingly about a full

*I know of no other that we'll trace so well as this Kerr's "Perfection."

one-eighth of an inch too short and too shallow all around. And we 'll flatten it down so as to have very little elevation in the center. If we get its rim an eighth of an inch really *too* low, no harm done; for our impression material will become a rim of itself.

Then we want the metal tray a little larger than our model (or mouth), so as to work loosely over it; say with a scant eighth of an inch play all around it.

It is easier, at least for a novice, to fit a metal tray to a model than to a mouth. Experienced practitioners can readily fit it to the latter. But whichever way you do it, fit your tray thus, to within an eighth of an inch of the gums all around; and always shy of the attaching muscles of the lip and cheek, so the metal won't strain them in the least.

Don't let your metal tray run up high behind the tuberosities so as to strain the tissues there. *Bear in mind, I repeat, your metal tray mustn't strain the tissues anywhere; especially not the muscular tissues.* (Stick a pin in that essential fact.)

After long effort, I have succeeded in getting some *Greene-Method* trays made on purpose for those who may learn their advantage. There are for the present ten in a set; and so shallow in depth, and otherwise so shaped, as to require a minimum of change. They are manufactured by the Detroit Dental Manufacturing Company, Detroit, Mich. While you *can* cut your *old* trays down and shape them, as I show you, you can get more appropriate new ones. Ours have removable handles, the advantages to be shown later on.

THE FITTED METAL TRAY.

Now you have fitted your metal tray, either to the approximate model or to the mouth itself, in a way to leave space-room for your compound to hide it (the tray) when your correctable impression is first taken. That is, the impression material must cover the metal trays all over. The metal can't be manipulated; the material can be—one reason for low-rimmed trays.

Be sure your tray either has holes through it or else is well smeared with actually adhering compound before you place that for the impression on it, to insure sticking safely. And I 'll here remark in advance: Be especially careful in fastening impressions to metal trays in partial cases.*

*See new pattern of Greene-Kerr impression-and-bite trays in back of this book (1915 edition). They need a minimum of change.

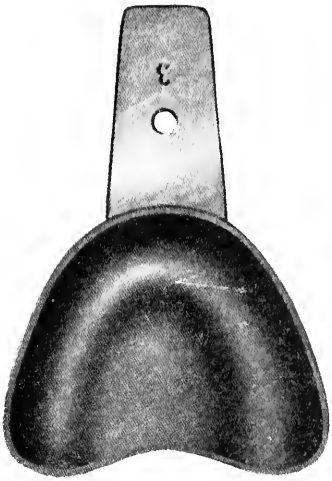


Fig. 1.

Fig. 2..

FIG. 1.—Average deep tray before cut down and fitted to the mouth. Its high rim would distort the tissues. All trimming of plates from impressions in it must be by unreliable file-guess-work.

FIG. 2.—Same tray after cut down and fitted to the mouth. Can be deepened, if necessary, with modeling compound traced from Kerr's tracing-sticks. Then the impression rim can be accurately muscle-trimmed.

Fig. 3.

Handle can be removed for muscle-trimming, and to show how impression fills out the lips and cheeks.

NOW TAKE YOUR CORRECTABLE IMPRESSION.

This I will first illustrate in detail. Then, when you understand it in detail, I 'll unite these details as we 'd do it in a practical operation. You 'll combine as many details as your case and your experience may warrant. But first learn the principles *in dissection* and practice them in detail, till you can safely unite them.

TWO METHODS OF TAKING CORRECTABLE IMPRESSIONS.

We also teach two methods of taking a correctable impression:

(*a*) The student's method, and

(*b*) The practitioner's method.

The practitioner can often use the student's method to advantage, but the novice in impression-taking would best learn by the student's method.

STUDENT'S CORRECTABLE IMPRESSION.

Take your now fitted tray, with its low rim and short rear, and take an impression of the same model you fitted the tray to. This will give you an approximate impression with a margin of material above the metal rim and behind the metal tray. It may be so lacking as not to deserve the name "impression." It 'll be merely a modeling-composition *tray*. It will, however, be your student's *correctable* impression.

To *take* this correctable impression of the model, you first dust it with flour of soapstone, so the impression won't stick to it. *"And don't you forget it!"*

To separate them, you first chill the impression a little; then pull it away a little bit

from the model at the heel, or tuberosity. Then quick-dip in cold water to let it (the water) in between the impression and model, and very *quickly* hard-squeeze them back together, to restore shape to the impression; for it probably sprung some in the partial removal. *Then* take the model out of the impression and cool it thoroughly. Should you neglect to pull the impression a little away from the model while it is yet warm in the interior, as shown, you may have difficulty in getting it off when cold.

The next thing would be to transform this correctable impression, or compound *tray,* into a perfect *tested* impression. But before we do it, we 'll take up

(*First Step.*)

THE PRACTITIONER'S APPROXIMATE IMPRESSION.

So now we 'll stop to take a similar correctable impression by the practitioner's (cut-short) method. Then we 'll fit each of these approximate impressions to the mouth, in about the same manner.

To take a correctable impression from the mouth (practitioner's way), instead of from the approximate model (student's way), place the "Perfection" compound in a small pan of water with rubber dam under it to prevent sticking. Heat it some, but not hot enough to scald your fingers.

With your hands and fingers well wet with warm water roll the material into a ball; place it in a tray, finger-press or fashion it to approximately fit the mouth, but *cone-shaped in center,* with full-high rim all around.

The cone-shape is to insure its striking the center of the mouth *first* and scattering out-

wardly; a matter of especial importance in deep arches. All impressions of all materials must scatter from the center outwardly.

With your material well shaped, now pass it back and forth, laterally, over a small hand-spirit-lamp flame, to soften the surface to a semi-flowing consistency, not quite hot enough to burn your fingers at a test-touch. *Always have your fingers wet* with warm water. Tell your patient it 's quite warm, but not hot enough to burn. *Don't forget this precaution.*

Now, with your left arm around your patient's head (her head forward rather than backward) and the long finger of your right hand in the under-center of the tray, push upward gently, with an up-tension, wave-like motion; *an upward spring-like* pressure, mind you.

Push *lightly,* for impressions should be taken at about the strain plates are to be worn. (This point is worth repeating in your prayer for success.)

Technically speaking the *proper* strain would be just what the patient would use in sucking the impression up.

If the roof of the mouth is deep, pull forward a little while you are playing upward, in order to strike the front palate right-angle-ward; for modeling-composition impressions should be taken at about right angles *at all point*s, as well as to about the normal sucking plate-pressure.

When you have it pushed to place, hold it steadily until you reach around to the right side of the face and with the index finger of the left hand adroitly flip up the squashed material that overlaps the rim of the metal tray there or push upward through the cheek from outside.

Then remove your right-hand central finger,

aforesaid, and dextrously change off to your *left*-hand middle finger, in place of the right-hand one. Hold as before while you reach around and flip up the left overlapping ledge with the right-hand index finger. (Don't get hands and fingers mixed up.)

I mean quickly push the compound up above the edge of the tray *all around;* but not tightly against the gums—for reason given later on.

Now, *right away,* while the material is still soft, tell patient—and show her how—to work the rim of the impression down by lip-and-cheek motion. By prompt movement of your *own* lips you will prompt her. (And you must do this familiarly yourself to impress your patient to do it. *Get before a mirror and practice.*)

Hold up impression firmly with your right-hand middle finger while patient gets a quick move on her and obeys orders.

This lip-and-cheek movement gives you the approximate height of the impression—not the exact height.

Now to cool it. Again change to *left* finger and hold while with your *right* hand you reach to your cup of cold water and get a little sponge, about the size of a small black walnut, and hold it, ice-cold, up against the under roof of the metal tray for a full half-minute, to cool the impression.

PRACTITIONERR'S PARTIAL TEST FOR FIT.

When cold, let go the tray. If the impression stays in place (without any muscular movement to dislodge it), that proves it fits the roof and alveolar ridge; all the fit you want *now.*

You know it fits *there,* because it stays up without fitting anywhere else. You 've never pressed it to the gums on the side nor at the

back palate; hence the stick must be at the center and on the ridge—just what you want for the present.

This is the *test* for the center and ridge fit. And I 'll assure you that if you do this, as I 've told you and here shown you, you 'll not fail to get this center-fit once in fifty times. That is, to repeat: by coning-up your material in the center, warming it to a half-flowing condition over a spirit flame and pressing it up by wave-motion, at normal wearing plate-pressure, suction pressure.

Now you 've taken your correctable impression by the practitioner's method; and you have about the same results as by the student's method, *only* that you have a *tested* fit to the roof and ridge, which the student hasn't.

SUPPOSE IT DOESN'T CENTER-TEST.

But now, doctors, for convenience of instruction, we 'll suppose that once in a while we *may fail* to get this roof-fit by the practitioner's method. We 'll then first get the exact *length* which the plate is to be at the back palate, and proceed to correct the roof and ridge till it does test-fit.

Mark this point in our work: We make no roof correction until we first get the exact length of our impression at the rear. Nor do we do both, the correction *and* getting the length, at the same step into the mouth.

(*Second Step.*)

TRIM IT APPROXIMATELY.

We have before us our correctable impression. In this case it fits nowhere correctly yet. Now, our second step is to complete its approximate trimming.

Its *rim* has already been trimmed approximately, as to height, by the lip=and=cheek motion of our patient, "Madam" (usually one of the class); but its *sides* are thicker than we 'll want them to be in our next move, so we 'll thin them down a little.

I will touch the sides slightly to this manageable hand=lamp flame and shave them down with this sharp pocket=knife to about three times the thickness we 'd want an ordinary finished plate to be. We warm it on the outside very slightly to cut more easily.

Next, we 'll cut the impression off at the rear, leaving it a little longer than we think our finished plate should be; say at least an eighth of an inch too long. If it weren't that long, we 'd take a tracing=stick of Kerr's "Perfection" material (same as the rest of the impression) and trace=on to wanted length. (Here the fine art of tracing=on is shown objectively to the deep interest of the class by the "bless=ed sticks."

But now, before we show how to get the *exact* length of a plate at the rear, we must understand what length it *should* be. *That* is one of the most important matters in plate=work—if a roof is to be left at all. In many mouths a roof isn't at all necessary; and in some actually detrimental. But where used, the *exact extent* is often a very close point to make.

In some mouths even an eighth of an inch or less would cause sticktion, or prevent it; then again, in others we have a latitude of a quarter or third of an inch margin to go on.

What we want is to reach onto the stationary soft parts and yet *not* onto the movable soft parts.

If we don't get onto the yieldable soft and

press *it* up, our plate will tip down behind easily. And if we get onto the movable soft, *it* may *move* and push the plate down; or, at least, cause "gagging."

Now, can we make that fine line of demarkation *between* the stationary soft and the movable soft tissues at the rear of our impression? If we can't, we may fail. But we easily can.

TO GET LENGTH OF PLATE IN A SOFT MOUTH.

If the mouth is what we call a soft one (no hard palate), we find this line with close precision by the ordinary swallowing movement. That is, we thin down the impression from the under side (it purposely being a little longer than the metal tray) until the edge is, say, an eighth of an inch or so thick, and a little bit longer than we think a plate should be in that mouth.

Then we warm this thin, projecting edge at the side of the little spirit-lamp flame till it will yield readily to the touch of our finger, but not burn it.

Then we slip the impression into the mouth quickly and have patient bite down on our finger and promptly swallow a time or two. She has to bite down on something to enable her to a good effort.

Now she has swallowed boldly. We take the impression out and find the rear of it *turned down,* as far as the moving parts moved; and *only* that far.

We chill it in cold water and trim off to where it turns down. We may do this a second, or even a third time, if necessary to make sure of the all-important point.

This procedure will give us the proper length of the plate ninety or more times in a hundred, if done rightly. And in the other ten or less

times in a hundred the failure would show up when we made our final test of finished impression; which we can then correct.

(The process is here shown closely to each one in the class.)

TO FIND LENGTH FOR PLATE OVER A HARD PALATE.

The method just described is for a mouth with a soft roof. We have an easier and quicker way of finding the length of an impression (or plate) in a mouth with a hard palate.

Doctors, you have never taken an impression of a hard-palate mouth that didn't show just where the hard reached to. You can generally see it quite plainly. And such an impression always tells you itself just where to cut it off; at least, where *not* to cut it off. That it will not do to cut it off *on* the hard part will bear repeating—Several times if necessary. *It 'd then* easily tip down, not having a valve-like pressure. Take a sneeze and remember this.

Cut it off at least one-eighth of an inch back behind the limit of the hard part; even a quarter of an inch is often advisable. Just so you don't let it reach onto the *movable* soft part; in which case it would "swallow down," or "gag" badly.

To repeat the rule: Reach onto the *stationary* soft part without encroaching onto the *movable* soft part. This valve-pressure-line demarkation is always an eighth of an inch wide—generally more. Pretty soon I 'll show you how I make the essential valve pressure thereon.

And a little prematurely I 'll here mention that we must reach the soft tissue and make this coming valve-pressure fit extend clear around on the plate-to-be—behind the tuberosities and all.

We must have an equalized-pressure fit all *over* it and, additionally, a valve-pressure fit all around the edges. We must, by detail when necessary, transform the non-fitting, correctable impression wholly into a correct one and test it finally to *know* that it *is* correct everywhere.

We now have the rules for finding the length of an impression (consequently plate) for either a hard or soft palate. We class the *medium* with a soft palate. A *hard* one is where you can *see* in the impression of any proper material just where the hard reaches to.

(*Third Step.*)

CORRECT ROOF TO TEST-FIT.

We now have the approximate height of rim and *true length* of impression. However, if at any point the rim is lacking, we 'll just trace-on as much as is needed, as I have shown you.

This tracing-on of additional material will be more frequently required behind tuberosities than anywhere else, because in some mouths you can't, in the first place, get your finger up *there* in the mouth to push it up.

We 'll first trace-on the required material and then approximately place it, with wet fingers. We 'll adjust it *correctly* when we so treat the rest of the rim.

Now we are ready to make the *correct fit* to the roof and ridge, which should have been accomplished when we first took our correctable impression, and which will be accomplished ninety-five times in a hundred if done as shown you. Well, this roof correction is quickly and easily made.

We have here a common tin-cup with a spout like that of a teapot, near its top, that will pour

a stream about the size of a ten-penny nail. From it we pour hot water into the impression until it fills up to within an eighth of an inch from the top.

We pour on and on, the hot water running off at the heel. We 'll not heat quite to the top of the rim, however; the patient's lips would then turn it over the wrong way when we 'd insert it in her mouth.

We 'll get the center as soft as we can without burning the mouth. And here the Kerr "Perfection" has rare possibilities. We *quickly* insert it and immediately wave-press *lightly*—quickly, for *haste* here is absolutely essential to success. To simply see this is to learn *how;* but with slow people sufficient *quickness* may have to be acquired by practice.

Now, the question simply is: *Can you do this quickly enough?* If not, why, then not at all. No physical stupidity nor poke-and-go-easiness will fit in here. If you *can,* you 'll seldom fail in the first effort.

But the hot-pot pouring and other efforts must be repeated until the impression will stand a roof-fit test; *i. e.,* hang there snugly, with no muscular movement to loosen it.

Take notice, now, if we have made much change in the impression in this "equalizing" work; we may find a little bit of a roll of compound showing up where the hot and cold points met on the inside of the rim. If so, we 'll scrape it off down even, before we forget it.

While this roof-correcting step is very seldom necessary in the practitioner's method, it is very frequently needed with the student's method. It depends on whether or not the compound is coned-up in the center, softened thor-

oughly, and pushed up with right motion at a proper angle and due strain.

An excellent, and often the better, way to make this correction is for patient to bite down into the approximate ("correctable") impression, when properly warmed. To prepare for this place a little strip of warmed compound onto the metal tray (opposite side to impression) and have patient bite lightly into *it*. This provides an occluding mouth rest to bite into in the correcting process; and avoids all danger of rocking impression, or sliding in case of very flat flabby mouth.

I 'd like to both whisper and "holler" these essentials in the ears of all plate-making dentists. I could save them so much trouble.

(*Fourth Step.*)

CORRECT RIM TO MUSCLES.

This is to get the precise height of the plate-rim *everywhere,* including behind tuberosity, and especially to get a correct fit to the *moving, straining* tissues.

I don't mean to get for them merely *relief* from strain, but a sort of accommodating pressure *to* them, with ample room for air-tight movement. We christen the gratifying result

RELIEF-WITHOUT-LEAK—THE PERFECTION COMPOUND IMPRESSION "PASS-WORD."

We accomplish the precision in part by a system of muscle-trimming on sensitized edges. We take our approximately trimmed impression, warm the edge of the rim slightly all around, including tuberosities, and pinch it up a little; or if necessary add a little by tracing-on. This

purposely brings it up a little too high and somewhat thin at its very top.

This extra high rim we *now* warm quite soft to a very shallow depth, insert it in the mouth, and with quick, positive movements of the lips and cheeks work it down to the proper height, to fit the moving muscles.

This I give you as an advance, hurried prelude to what we do. Next I 'll *"show" you.* (From Missouri.)

Now watch me closely. By the side of this little hand-spirit-lamp flame I warm this pinched-up edge (one side at a time in many cases) *very soft* to the depth of about an eighth of an inch.

Now I 'll slip it into the mouth *very quickly,* and have patient promptly make all possible movements of her lips and cheeks that she 'd make in wearing a plate. I usually do this one side at a time.

Take notice: *(a) very* soft; *(b)* to a *very* shallow depth; and (*c*) all done *very* quickly. *Three "very"*s. "Stick a pin" in to hold these three "very"s!

Well, to impress you I 'll baptise *this* stunt in *New River* and name it

VERY-EDGING, OR MUSCLE-TRIMMING.

So I have trimmed the rim of the impression, hence the plate, too, by muscle movement. Every tissue, hard and soft, has cut its way into this "very" soft rim (over a hard under stratum) and has room for free pressure movement.

Sometimes this has to be repeated, and particular points especially rewarmed, to get the

trimming exact. But persistence is sure to bring accurate results.

"Quick work!" Yes, it *is* quick work. And, by the way, you can, by this very-edging process, trim an impression (hence the plate) more than ten times quicker than you could file-trim a plate, not considering the incomparably greater accuracy in favor of muscle-trimming. This is relief-without-leak trimming.

Each one of you will have to practice and get the move on your own face, to show your patients. You can't merely *tell* all what to do. Some must be "shown."

Then, once in a while, you may have to train a patient—not only to act, but to act *promptly*, before you attempt the practical action of her face.

If one attempts to joke and say and do funny things, just look stolid and don't smile, but frown at her "monkeying." Give her to understand that *you* are in earnest, and she soon will be.

Until you become familiar with this part of the work you may have to "very-edge" one side at a time, always entering into the mouth on the opposite side from the softened rim. This to prevent the cheek from mal-pressing the softened edge.

Be careful to soften properly behind tuberosities. There the muscles, sometimes stringy, will press down into the soft material and do their own trimming, without much, if any, straining motion. In your hurry don't forget this point, behind and around the "heel-knobs."

TO ESPECIALLY FIT PARTICULAR MUSCLES.

As a matter of importance, I 'll here again repeat: If anywhere, at any time, you should

see on your partially "very=edged" rim indications of muscle strain, just re=warm that particular spot "very shallow" at the side of your spirit flame, or, better, with a mouth blow=pipe, and hurry it into the mouth and have patient work that muscle promptly.

If she is too slow, assist her motion with your fingers. But better first train her to her own movement, whenever you can.

While attending to special parts, don't forget the upper frænum. You 'll be surprised at both the quickness and accuracy of results. Unless individual muscles need special attention, you can accurately trim an impression (consequently the plate) in a few seconds.

Bear in mind: When you muscle=trim a rim=edge, it is, with rare exceptions, left high enough to reach beyond the hard parts onto the soft and yieldable tissues. Only on such you can get valve=pressure fits.

(Here in the class Course we show the very=edging process, in minute detail, on an impression, in our own mouth; *always* to the gratifying surprise of the old=way file=trimmers.)

Someone asks: "How much should this be done in a given case?" Why, just till the ordinary and natural movements of the cheek and lips fail to cut any deeper into the "very softened" material.

But, doctors, don't forget this "new thought," that you 've probably never heard of before; certainly never in print. There are some mouths where cheek=and=lip motion isn't sufficient, even when properly done. It is sometimes necessary to further and additionally warm the impression down into the groove that covers the ridge and tuberosities, from about the second

bicuspid back; and then have patient *bite down* onto your fingers, or her fingers, or on some compound, placed for the purpose on the under-side of the tray—on *both sides at once.*

This is to provide in your denture for strain made by the biting muscles and must be done by biting down instead of pressing up. But all this will come up more plainly in our second lesson when dealing with the massiter muscles.

When a plate is trimmed to stand the ordinary movements of the mouth and *face,* the wearer will soon learn to avoid extraordinary ones, or even to safely make them, in practical use.

(Fifth Step.)

CONFORM COMPOUND TO SOFT PARTS.

Your impression reaches up onto the yieldable tissues, on which you are to make an equalized valve-pressure strain against the inner side of the impression rim at its top.

While the tissue reached is generally yielding, it may still be harder in some places than at others; and it is on these different textures you want to equalize strain. That is, press against the soft parts, *between the harder ones,* so as to get an air-tight fit on the soft places, as well as on the harder ones.

To do this, you simply, but *slightly,* warm that part of the impression that is above the metal tray, and press gently, but firmly, horizontally against these soft parts, and cool it there *while under strain.* I emphasize: while under strain; otherwise the material might rebound, when you 'd lose your pressure.

Conforming is the name we give this right-angle-pressure operation. While it is very sim-

ple, it requires nicety of manipulation and *care;* nicety to *do* it and care not to afterward *undo* it.

It requires more experience to *properly* conform the rim of an impression to the tissues than to do any other one thing I 'll show you in this whole Course of eight to ten hours.

But I hope you 'll not object to some nicety of operation and carefulness as long as less is asked of you than you require of the man who shaves you. Should you hesitate at simple trained touches like this, then never attempt the keener technics of tonsorial artistry.

But let 's do it. Watch me warm the rim of this upper impression (on the left side) by passing it back and forth over this hand=lamp. I'm slowly warming it through from the outer side inwardly; all of it from the metal tray upward.

I 'll mildly warm it from the front=center clear around behind the tuberosity till it reaches about the softness of the palm of my hands. I test its yieldance with my finger—it 's ready! I slip it into the mouth and hold it up with the long finger of my right hand, and press gently to the *left* cheek *outside,* with my left thumb = and = hand, clear around to the front=center.

See? My thumb=hand just fits the madam's face as if it 'd been made for the purpose. I push squarely against the cheek and on the front lip, and hold it so for about a minute. By that time the Kerr "Perfection" material will have "set" enough to prevent rebounding when I remove my thumb.

"Hold still, Madam; *don't move a muscle!*" I reach over and dip my left=hand index finger (clean=cloth=stall=covered) into my near=by cold=water cup and hasten to reach in under

the lip and cheek (left side) and cool my now-conformed rim with a little pressure.

If I have an assistant, I have her do the cooling with a small syringe. But bear in mind, the cooling should be done while the pressure is *on,* for fear of rebound.

(We have no long handles on our trays to be in the way. Ours are either about three-fourths of an inch long horizontally, or one-fourth turned down perpendicularly; or wholly removable, when no longer needed.

Next, conform the opposite side in the same way. But here one special caution, doctors: after you have conformed one side of the impression, don't push *it* off from its gum when you conform the *opposite* side, and by so doing make a side-slipping impression. This relates particularly to flat mouths.

In a big mouth, with thin lips, we can conform both sides, and in front, too, all at the same time. *Then* there 's no danger of unconforming one side while we conform the opposite side. I sometimes thus conform both sides and in front all at the same squeeze, by clamping the whole face between my thumb and index finger of my right hand, while I hold the impression up to place with my left index finger; or *vice versa.*

The amount of strain used in this conforming should be about the same as I make by sucking my cheeks in firmly. In fact, conforming by cheek suction would be the way if we could readily get our patients to do it.

Say, doctors, when you have conformed the rim of an impression all around to the sides of the alveolar ridge *properly,* you have indeed accomplished a most valuable operation.

Now, we 'll go on and gently warm the heel-corners, return it to the mouth and hold it to place with our left-hand middle finger, while with our right index finger, cloth-covered, we reach up behind the tuberosities and conform *there* gently, too. We finger under and around by way of the palate usually, but sometimes *via* the more cramped cheek passage.

It is -all- important, especially in cases of roofless plates, that dentures fit up snugly, *without undue pressure,* around these prominences. It is *essential* to roofless plates.

We sometimes have such-like conformation made by the patients tongue, cooling it well before removal, after held to place to set a minute or so.

It is fine work to properly fit a plate around tuberosities; but when done, it won't easily tip down behind when bitten-on in front. Now clinch this heel-knob pointer in your minds:

Now, doctors, in practice we can frequently make all these steps, so far shown, by joining them.

No language can over-praise the results of proper conformation of the rim of a plate to the yielding tissues!

(Sixth Step.)

TO GET PROPER LENGTH OF PLATE AND CONFORM ("POST-DAM") BACK PALATE.

Now all parts of our correctable impression have been fitted to the parts, excepting the back palate. As this is really the most important point for adjustment in the whole mouth, I have left it till the last.

It should run back onto the first soft, or yieldable soft, tissue, but not onto the *movable*

tissues. If the mouth has a hard roof, as most mouths have, the impression will always show how far the hard reaches. Cut the impression off at least 1/8 of an inch further back than the hard shows, in most cases 1/4 of an inch.

If the impression shows no hard roof, then you find where to cut it off in this way:—See that it is a little bit too long. Thin it down at the rear and warm it, and have patient bite down on her fingers, or on something else that will hold the impression up, and vigorously swallow, two or three times.

If your compound is properly soft the rear-moving tissues will turn it down plainly as far back as a plate could be worn. Cut it off where it turns down. That will give you the proper length for a plate in a soft-roof mouth.

The impression material purposely reaches, as you understand, a little back beyond the metal tray; so the shortness of the metal gives room for a little cut-out of material under the end of the impression, leaving it thin-like there, similar to the rim.

Now, let us slightly warm this over-projection, as we did that above the metal rim, so we can conform *it* to the yieldable tissues, onto which it reaches.

I instruct my patient: "Now, Madam, when I put this impression into your mouth, I want you to press it up gently, but rather firmly, at the back part, with your tongue, and hold it there a minute till I snap my finger." When "set" enough to not yield back, she drops her tongue; and I finish with cold-finger pressure, same as I did the upper *rim*.

The tongue being soft, it presses the soft material against the soft, yieldable tissue to exactness. If there are any granular or hard

spots back there, as often there are, the pressure equalizes the strain against them and between them.

There is now a little general up-push all along the yielding line; a little valve-like pressure that precludes air passage under it.

Study well the rules and practice the methods of finding this exact right reach of your plate.

Method A, by tongue pressure, is the way I 've shown you to conform a modeling-compound impression to the post-palate.

It is my preferable way, and my general way under favorable conditions. But sometimes we have deaf people and sometimes non-English-speaking people to deal with. (Someone says: "Yes, and dam-phools!") Well, we must have a way to post-dam, in such cases, without the patient's help.

Method B, by roof pressure. This we do by warming the rear of the impression, as in Method A, and then turning it up a little too high and pressing it up against the roof of the mouth, when the tissues will push it back, still leaving some valve-like pressure. Of course, we cool as before.

While *Method B* isn't quite as accurate as Method A, it *is* far more so than any of the old scraping and grooving ways of getting rear pressure. Indeed, in many cases of granular palates, scraping and grooving for rear pressure won't do at all. Guess-work is rarely exactly correct at the best.

Method C is the third way of post-damming; that is by *finger pressure.* We warm as before, but scarcely as soft as in A and B, and press it up and cool it with cloth-covered index digit of right hand, at the same time holding im-

pression to place with the long finger of the left hand.

With experience and carefulness, Method C is easily accomplished and will succeed fairly well when there are no granules, or bumps, under the mucous membrane, to contend with. But in no case does it compare in exactness with Method A, by tongue pressure.

Bear in mind, that in any way the *cooling* must be done while the little pressure is *on*.

THE ESSENTIAL ART IN HANDLING MODELING COMPOUND

is to keep it cool after it has been adjusted; and to warm one part and adjust *it* without disturbing it elsewhere. But the work is no more difficult than many other things a dentist has to do.

While it requires far more skill to take a modeling-compound impression rightly than one in all-plaster, the results amply pay for it, and many times over.

In the *details* of a single impression we do several different things, even though we do them all at once in combination.

Now every one of these details can be done —at least, with this material (Kerr's "Perfection)"; while not near all of them can be done with plaster. But the whole plaster-impression subject is to come up later on.

UNITING DETAILS.

In actual practice we unite as many of these details as the case will warrant. Sometimes we can very-edge the rim all around at once; in large mouths with thin lips, for instance.

And then, again, as already shown, we can

sometimes conform all around at once, even including tuberosities.

And frequently we can both very-edge *and* conform all at the same step—perhaps not always *perfectly,* but yet to stand the tests fairly well.

Sometimes—in fact, often—we conform behind tuberosities and post-dam at the back palate at the same time. It 's a quick and easy way.

Sometimes the center can be equalized with hot-stream (seldom necessary) and wave-pressure at the same step when the very-edging is done. And it 's possible for an *expert* to do *all* these things thoroughly by two trips into the mouth; and fairly well by a single trip.

But trips into the mouth don't mean by the Greene methods what they do by the old ways, by any means. Our metal trays are not as deep nor as long as our finished plates are to be, as you have seen. And our impressions, even from the first, contain so little bulk that patients are always agreeably surprised, after having heard so much about the horrors of impression-taking; and they almost invariably so express themselves—voluntarily, too.

And for this one reason it pays to use the student's method of fitting a tray to an approximate model and taking the correctable impression from this model. (Page 18).

Bear in mind, we use no common, deep trays, even in taking an *approximate* impression; and seldom one-fifth as much material as by the old methods.

TEST THE COMPLETED IMPRESSION.

Now, after post-damming (Page 39), we make the final *test.* We slip the impression

back into the mouth and have patient open and close, laugh, bite her finger, and swallow. If none of these movements throws the impression down, they 'll not throw down a plate properly made from it; for the latter will be a molded duplicate from the former.

Conversely, if any movement should loosen the impression, it would do the same to the plate. So you 'd know one or the other *in advance.*

Really you 'll seldom find it necessary to make any correction after you 've made these six steps in detail. But, for convenience of illustration, we 'll *suppose* you make a blunder in your first attempt at a test impression. After you have post=dammed, you make your test. You push your impression up, and it drops down, even without any lip, or cheek, or swallowing motion at all.

STOP, THINK AND REASON.

After you got the length of the impression and then tested for roof=fit, you found it stuck up. After you muscle=trimmed and conformed its rim, it stuck still tighter. But *now,* after you post=dammed its rear end, it drops. *What 's the matter?*

The case is very plain. You over=strained the palate in post=damming. The over=strained parts rebound and push the impression off. What 's the remedy? Common sense—just *un*=post=dam it, and do it over.

That is, warm it as in the first place, and post=dam again; but *next* time with less strain. Keep on till you get a stick=up test.

Don't object to doing this three=minute job over, for the alternative would be to make the

plate from it "over"—maybe several times. (Someone says: "We 're used to *that*.")

Well, you 've re=post=dammed and have a test; but only a *still* test. It stays there all right when no muscles move. Now give it another test. Have your patient swallow vigorously.

IF IT "SWALLOWS DOWN."

My, how swallowing throws it down! What 's the matter *now?* It either reaches too far back or else some small palatal muscle (one or more) reaches unusually forward. In rare cases such may reach quite a way forward.

In this case, you will first re=test for length. Maybe you missed it a little in getting proper length in Step Two.

If you find your impression isn't too long, *then* try for palatal muscular strain. That is, warm the top of the impression at the very back part, place it in the mouth, and hold to place, while patient bites on your finger and swallows vigorously. She can't well swallow without biting on something.

The moving muscle will strain down the softened material; and thus a single effort may cure the trouble. But make as many efforts as are necessary; then, of course, re=post=dam slightly and cool well before removal, as before.

TAKE NOTICE: After you find the slight indentation in your impression made by the swallowing test, you can use the mouth blow=pipe, as in special very=edging for muscle room on the rim, a while ago.

ABOUT NAUSEA.

Never cut off a plate in front of the valve=pressure line to prevent nausea. Even if it

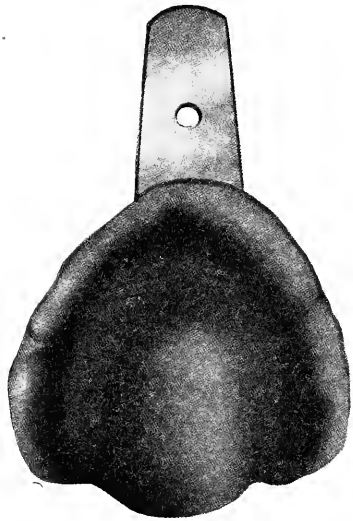


Fig. 4.

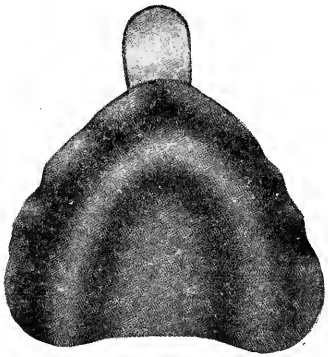


Fig. 5.

FIG. 4—Modeling compound impression as usually taken in common deep tray. Plate would have to be guess-trimmed to fit straining muscles—difficult, if possible.

FIG. 5.—In the same tray cut down and fitted to the mouth. Test impression just as taken by the Greene muscle-trimming method. No trimming of plate after made.

Fig. 6.

Modeling copound tested impression, just as taken; for plumping out the features. Common deep tray cut down for the purpose.

*Better use the Greene-Kerr removable handle tray.

cured the "gagging," it would make an easy-tipping plate. And shortening alone might not cure the gagging.

Nausea is often caused by lack of pressure at the rear of the plate. Proper-fitting (valve-pressure) plates can be worn farther back than poorly fitting shorter ones can be.

But nausea is often from a *mental delusion,* and then must be cured by a process of "mental suggestion." If a patient falsely *thought* a bed-bug was under her dental plate, she would "gag." And similarly, if she thought the plate was too long when it was not so.

I have, as others have, cured scores of cases of nausea by appropriate means of suggestion. It has often been done by *pretending* to shorten the plate "just a leetle bit" without doing so. And all experienced dentists will tell you of cases where they cured nausea by treating the patient's will-power. Teach them how to apply auto-suggestion. (Every dental college should be supplied with a "chair" filled with an expert instructor in Scientific Suggestion.)

When the cause of nausea is physical, or material, then combine physical *and* mental medicine. Benumb with cocaine and "tan" with oak-bark tea, or any other astringent. But always mix in good *Suggestion.*

MAKE MODEL ON TESTED IMPRESSION.

Our impression now stands the actual test; we must "pour" our model before it changes. Unless we can fill it right away, we must keep it in cold water until we can use it. Bear in mind that even this "Perfection" material will warp some in a warm room. So impressions of modeling compound must be kept cool until

filled; *remember that.* Better underscore this with red pencil.

Before we pour our plaster, we 'll thin our rim down to the exact thickness we want our plate. We do it with our sharp pocket-knife. If, however, we want the patient's face built out, we leave the rim thick, or even add to it (carefully) by tracing-on more from our blessed tracing-sticks.

Then, also, before we "pour," we 'll polish the rim-edge by quickly passing it a very few times over our little spirit flame and blowing onto it *quickly* from our mouth. But be careful not to heat it, in the least, to any depth. Cool between each blowing and don't keep at it too long.

The edge is now polished, and ten to twenty times quicker than the rim of the plate could have been polished after vulcanized. The coming plate's rim will now need the least touch of the polishing-wheel to complete it.

Again, before we pour, we must see that our impression is *dry.* If wet, the face of our model may come out soft, from lack of proper crystallization; that is, from too much water for the amount of plaster. We can soap-lather our impression thinly, or dust it with soap-stone powder, but we don't *wet* it. It must have no visible water in it.

I know this is contrary to high authority, but I insist on no water in my impression when I make a model. And I advise you to make some tests along this line; then report to your old instructors, who advised wet impression.

Within a stretch of four years, I asked two hundred and fifty some dentists what made their models sometimes come out of the impressions with soft, dusty surfaces; and just twelve an-

swered me correctly — under = saturation and faulty crystallization.

Of course, such a model would be unfit to vulcanize on. And yet how many plate=makers fail to comprehend this self=evident fact!

HOW TO MAKE THE MODEL.

Now, mix your plaster by the "full=saturation" method. First put the needed amount of water in a clean, smooth, earthen bowl and then put the plaster in it. Don't "sift it in slowly," for some of it would be wet much longer than the rest. But dump it in hurriedly; then hack it up=and=down with your spatula till it is wet through. Then mix quickly and "pour" before it begins to *set* at all. *Always tap bowl and pour off all the water you can.* Then pepper=box a little on top to satisfy the watery surface, if needs be.

If you stir it after it begins to set much, you 'll violate chemical action, break=up the forming crystals and make an imperfect body; which, though hard to *cut,* softens readily under heat and pressure. So, see that as far as possible all crystallization ("setting") takes place *after the plaster is in the impression;* especially the first part of it.

Extend the plaster just a little beyond the rim of the impression all around, and don't make the model needlessly thick over the arch. Reason for this later on.

Now, after the plaster in the impression is well set, trim it (plaster) off all around down even with the compound, using the impression itself as the guide to your thin=ground, sharp knife. Hold your knife=blade at proper angle so as not to cut over into the *bench,* or shoulder

of the model; which extension is to form the edge-rim of the plate.

TO SEPARATE MODEL FROM IMPRESSION.

First warm the metal tray and pull *it* off. Then set the impression into fairly warm water, just deep enough to cover the impression material, and not to warm the model.

Then turn the warmed compound down at one of the heel-corners to get hold, and peel the whole impression off from the model.

You now have a good, hard-faced glossy model, with a smooth *bench;* which extension is to give the plate the exact same height and thickness of rim the impression had. Plaster should be "well stirred," but the *least bit,* if any at all, after it begins to set.

As for myself, *I* like to polish the *roof* of my impression, same as the rim, so that part of my plate, too, will be smooth and easily kept clean in wearing. But should *you* do this, be sure and test for fit again before you pour your model. At first you 'll be sure to use too much heat in polishing your impression; for any *heat* is too much. And you 'll be apt to continue the gloss-warming and blowing too long.

DON'T LET IMPRESSIONS CHANGE.

Make your model at once, before the impression warps from the heat of your room. Or else put it in cold water, and *keep* it in until you get time to use it. Doctors, this repetition needs no apology. You 've probably been letting impressions change before filling.

The absolute unreliability of the average "brand" of modeling compound in holding its

shape, and the ignorance concerning its manipulation, and the carelessness of dentists are the principal three reasons why compound is not in universal use for impression-taking; especially for full plates.

METAL VS. PLASTER MODELS.

Now as to the question of models. I 've given you what I conceive to be the best method of making plaster models; that is, *full saturation, with no stirring after hardening begins;* the same holding true of the various mixtures of plaster, sand, Portland cement, etc., etc.

If you use good plaster and this carefulness in mixing, and don't spoil your models, nor pack so as to strain them any after they begin to soften (by natural disintegration, that takes place under heat and moisture at about 300 degrees F.), you may get through your case without *much* change in your model.

But under the greatest skill in mixing and pouring and flasking you will always have *some* change; possibly, however, in a direction to do more good than harm, as to that.

Under conditions, plaster will expand and contract; and its compressibility is sometimes astonishing.

To prove this yourself, make you two plaster models from the same impression. Then vulcanize on *one* of them and try your plate on the other one. There will always be *some* lack of fit, which shows just what change took place in the model you vulcanized on under moisture, heat, and pressure, including the force of vulcanite shrinkage by hurried cooling.

So the less pressure you apply in packing (especially after your model begins to soften)

and the more slowly you cool a flask, the safer you are from *serious* change.

And now, to fully impress you with the compressibility of plaster, you can easily make a convincing test for yourselves. Prepare a flask, both halves filled with the best plaster; place a silver dollar between the two halves and boil, and squeeze, and vulcanize as usual. Then open it; you 'll find your silver dollar entirely hidden in the plaster. Then use *two* dollars, one on the other, *and record your impromptu ejaculations.* (I made this exposure of the faultiness of plaster at the National meeting at Birmingham in 1909.)

GREENE'S NON-CHANGEABLE MODEL SYSTEM.

But I 'm glad to report to the dental profession that, after years of puzzling over the vexatious question, I have at last solved the problem. The problem of avoiding this inevitable change in plaster models, both before and during the flasking and vulcanizing process and in hurried cooling.

I do it by disposing of 95 per cent of the amount of plaster in a model, to begin with; and then holding the 5 per cent into place so the infinitesimal change in *it* can't do any perceptible harm.

I make an approximate model of aluminum with its surface prepared to retain a thin film of plaster.

This aluminum model is of a size and shape to slip down into and approximately fit, but still very loosely fit, the impression. In fitting this non-changeable metal model to the impression, I first besmear its face-surface with a little plaster; then dip-pour some into the impres-

sion and plunge the face-covered metal model into *it;* then hurry up and complete, the same as if the model were all plaster.

I then trim the model while yet *in the impression;* and also remove the impression material from it—both just the same as with the all-plaster one before mentioned.

Now we have a metal model, thinly veneered with plaster; which facing is necessary to fit it to the impression, and *also* to enable the removal of the metal model from the vulcanized plate. But the amount of plaster used is too small for any proportionate change in *it* to be noticeable.

I may here add that in some cases of undercuts in the mouth the case must be left in the flask till the softening takes place in the plaster coating on the metal model. Leave the case in flask, if convenient, over night; in fact, that 's the *right* thing to do in vulcanite work anyhow.

But, instead of making an approximate model for each case, I have a *set* of them already made, from which I select the one needed. It consists of one hundred models and is expected to accommodate almost any case, full or partial.

The set is so systematized in size, shape, number, and letters that one or two minutes is sufficient time for making the selection.

For swaging (by the new-process methods only), we veneer our metal mold with a half-and-half mixture of Portland cement and plaster, well pulverized together in a mortar *before wetting.* This swage-model must thoroughly harden before use.

(Here the class is shown how to fit Greene's non-changeable, approximate metal models to an impression. See especial instruction in Ap-

pendix hereto; under heading: THE GREENE READY MADE NON-CHANGEABLE APPROXIMATE MODELS.

MODELING-COMPOUND IMPRESSIONS IN DIFFICULT CASES.

Our instructions so far apply to ordinary cases. But occasionally we find mouths where other different means must be used. For instance, here we have a case with protruding ridge in front and an "under-cut" above it.

To take this impression and preserve the under-cut, we first take it fully up *to* the beginning of the turn that makes the under-cut. Then we trim this edge of the impression down so as to dispose of all of the under-cut.

Now cut two or three little notches in the trimmed-off edge. Then varnish this edge and brush a thickness of tin-foil onto it. The varnish is to hold the tin-foil onto the trimmed edge of the impression.

Now we use the "Perfection" tracing-sticks and trace-on or otherwise add enough material to bring the rim up to its proper height. Then warm the traced-on addition over the spirit-lamp and quickly slip the impression into the mouth, and very-edge and conform this addition down onto the main part just as if the two were all one piece. Then *cool well* and remove.

In taking it out of the mouth, the addition will pull loose from the main body of the rim, and the impression come out in two pieces.

Then, when out of the mouth, we place the addition back onto the impression where it belongs, guided by the notches, and we have our full impression, under-cut and all.

Should you wish to take an impression somewhat over a bulging tuberosity, you *can* use plaster for the addition, if not too thinly mixed.

Of course you understand the tin-foil is used merely as a separator between the impression and the added edge over it.

If you take more of the under-cut than you can use, of course you 'll have to tip the plate accordingly to enter it over the bulge. Practically, it 's no use to take more of an under-cut than can be comfortably used.

SOFT, FLABBY, ALVEOLAR RIDGE WITH HARD ROOF.

Such is about the worst case you 'll ever have to deal with. The ridge hangs down loosely and flips to and fro as your lip does when you talk.

The right thing to do is to absorb this flabby tissue off, and reach a harder density.

This can be done, if patient can be controlled, with perseverance and patience. I have had usually good results from *quarter strength iodine,* with, say, two per cent of it carbolic acid.

It is applied on bibulous paper worn on a temporary plate. One of shellac base-plate will generally do.

In connection with the medicine, liberal friction should be applied several times a day, preferably with dry woolen cloth. The iodine, the friction, and the pressure together should complete absorption in two or three months.

But I 'll give you two recipes that are probably better; or, at least, quicker. They were given me personally by my esteemed friend, the world-known orthodontist, Dr. E. A. Bogue, of New York city—63 W. 48th Street.

"RECIPE NO. 1.

"Vienna Paste for Reducing Soft Gums.

[Translated.]

"Caustic Potash, 50 grammes.

"Quicklime, 60 grammes.

"Pulverize the two substances in a heated mortar; mix them rapidly and thoroughly, and put them into a wide-mouthed b o t t l e with ground glass-stopper.

"We make a soft paste, dissolve with a little alcohol and apply in the same way as caustic potash.

"Leave the caustic twenty minutes or more in place, if a small quantity of the paste has been used to make a deep opening. Wash the eschar with acidulated water to neutralize the remnants of the caustic.

"To lessen the pain caused by Vienna Paste, Dr. Piedagnel added a quarter of a gramme of hydrochlorate of morphine.

"To make sure of the action of Vienna Paste, Dr. Dannecy dissolved the potash and lime in an iron spoon.

"Vienna Paste melted in a spoon, or poured into a leaden cylinder, is a caustic which destroys quickly and deeply."

"RECIPE NO. 2.

"Dr. Sass's Formula for Reducing Soft Gums.

"IODIDE OF ZINC.

"Zinc Sulphate, as much as will dissolve in cold water.

"Dissolve one ounce Iodide Potash in two ounces water, and add as much Iodine in crystals at it will take up.

"Then take equal parts of above solution and put them together."

Iv'e known dentists heroically to use a pair of curved scissors. But *here* in this lesson we 'll go on and do the best we can without removal of tissues. We 'll *compress* it to a degree of equalization of stress between *it* and the hard roof. We'll just take the impression as heretofore shown in a plain, easy case.

Of course, the flabby tissue turns *outward,* as our lip does when we push it with our tongue; but we 'll push it back again. The metal tray, in such cases, must be *quite low,* so as not to interfere with such back=pushing.

Now, while the impression is still soft, we finger=push onto the outer rim until the soft gum tissue behind it is back to about its normal hanging; then chill well and remove it.

Next we hot=stream the impression from our spout=cup till its bottom surface (not to rim=top) is quite soft; and re = take with wave=pressure. Sometimes it is well to stick=trace a little additional compound down in there.

This time the cooled outer rim of impression, being hard, prevents the flabby flesh from turning outward as it did before.

Our upward wave=motion strains the mushy flesh and causes it to compress and consolidate onto itself; that is, becomes more dense.

We repeat this several times if necessary, until we get the flabby tissue almost to a straining or rebounding density; that is, till the impression fits the soft ridge and harder roof with approximate equality of stress—not what we 'd *wish,* yet approximately so.

Next we warm the impression's rim=edge, hold it up close and very=edge, as instructed before, in muscle=trimming. (Page 33).

Then we re-warm rim (outer side) from metal tray to top, return to the mouth, and *conform,* according to instructions for conforming here-before given. (Page 36).

And lastly, we 'll determine the *length* rear-ward, and post-dam according to density of back palate, as you 've been carefully shown.

And now for test for "sticktion." We ought to have an impression that will not readily be thrown down. It may rock, if pressed on in front or on sides, but, while it gives upward on one side, it gives downward oppositely. Our valve-pressure-fit all around saves it from tip-ping *entirely loose.*

While such a fit isn't *fully* satisfactory, a plate from it can be worn with considerable comfort and practical utility. This depends much on the persistency of the wearer. I 've known several plates to rock an eighth of an inch and yet worn with satisfaction. I mean in these cases of flabby ridges. The "play" of the valve-pressure kept them from leaking and tipping loose.

FLABBY IN FRONT AND HARD ON THE SIDES.

Another case of flabby gum is, say, where the tissue in front is soft, while the side ridges are hard. In this case, we take our correctable impression as if it were flabby all around. This turns the soft gum outward. Then, while the compound is still soft, push it back (in front) until the soft ridge is to its normal perpendicular position; and cool before removal.

Then take it (impression) out and use the hot-stream once or twice all over the inner sur-face, each time re-fitting it to the mouth.

Sometimes in equalizing, in these local spon-gy cases, it will be necessary to soften *only* the

impression over the *hard* tissues, in order that these rigid parts may cut down into the softened material, while the *soft* tissues are being pressed up by that part of the compound that is not soft.

To heat one part of the impression and not the other part is very simple: Just pack cotton over the part not to be heated, before pouring the hot-stream; then immediately remove it before re-taking for equalization.

Thus the bony ridge cuts into the softened impression and causes the hard part of it (impression) to correspondingly push up and displace the soft *flesh,* to equalization of pressure.

To recapitulate: the *process* is the same as we had a while ago with the case of soft, flabby ridge all around. The *idea* is to hold the loose tissues in their normal position; then compress and consolidate them, so as not to yield much when bitten on, and to rebound and keep their room filled air-tight when not under strain.

Study such cases, and study *your patient,* and decide whether you want to remove the flabby tissues or *equalize* them, and then act accordingly.

A VALUABLE REVIEW.

(Here the whole matter of equalizing the soft tissue with firm ones was repeated in clinic till the class could explain themselves. Also a review was made and the class re-impressed with the importance of conforming and post-damming, to the purpose that plates may not tip down behind while bitten on in front, or tip down on one side while biting on the opposite side.)

ROOFLESS PLATES.

By a roofless plate we mean one whose roof-center is lacking. It is a fact that fully one-half of all upper cases might be made roofless. Indeed, many more could be if we had not mal-educated the public to the idea that dentures should stick *tightly* in the mouth.

I say "mal-educated," because from long observation and personal experience I 'm convinced of the fallacy. It 's not the *tight-sticking* plate we need, but the one that can be worn more loosely and more comfortably *without being thrown down,* or up, by straining tissues.

It is a truth (surprising to some non-thinking dentists) that cases are numerous where a roof covering the entire palate is detrimental to retention of the plate, as well as to the comfort of the wearer.

A toothless upper jaw with a very hard center is frequently one of them. Especially is this so if, as is generally the case, the rear of the plate doesn't reach back beyond the hard part, and doesn't fit up on the soft so as to make valve-like pressure.

I mean, to plainly put it: if a plate is cut off too short on a hard-roofed mouth, it 'd better be cut clear out, up to the ruga or even beyond. In that case, the plate would settle as the ridge absorbed and the *fit* would still be maintained.

It is sometimes funny to see dentists bug out their eyes at the mention of a roofless *full* denture when they are already making roofless partials, more difficult than the others.

But, to make a roofless full plate practicable, its rim *must* reach the proper height all around, *including* tuberosities, and have a good, close valve-fit on the inner edge thereof.

This is done by muscle-trimming for height and conforming for pressure, as you 've been shown in other cases—a *cheek fit,* so to call it.

Then it must also have the same sort of a fit on the lingual inner edge. Hence the plate mustn't be trimmed off quite to the hard border of the ridge, for there we can't make the necessary valve-pressure to prevent its tipping.

It should extend down to where the mouth is a *little soft.* And then, instead of post-damming, we side-press the edges with firm tongue pressure; in some cases, with finger pressure.

Don't attempt to get the "extra pressure" by scraping the *model,* for there may be various densities of the half-soft tissues. Scraping is guess-work at best; and you can't test it. When side-pressed with tongue, or even finger, we can test for satisfaction of fit. And again here I repeat without apology: *All conforming must be done by cooling the material while it still presses the yielding tissues.*

While an impression for a roofless plate is taken, in a general way, the same as for a roof plate, *especial* care should be made in every step and detail.

The rim and heel trimming (very-edging) must dispose of all muscle strain, and yet in a way to leave no leak. *"Relief without leak."*

Take notice: When I say you can't cut a plate off where it edges on a hard part, I mean from the middle of the mouth rearward. It may rest on such places forward of the center without harm; for the more pressure *there,* the tighter it fits.

But I repeat: When you have a very hard place, better cover model *there* with tin-foil, when packing, to provide for the inevitable settling of the soft parts in adjustment, by wear-

ing. The softer the soft parts, the thicker the tin-foil should be.

INSTRUCTIONS TO PATIENTS.

When you make a roofless plate, be sure to instruct your patient to practice chewing chipped ham or dried beef *on both sides at once,* between meals, for a week or two, to evenly adjust plate, all around alike. This can be done also by a habit of biting the teeth together without feed, if the occlusion is good. Instruct her to do both.

Well, in fact, this should be the instruction in *all* cases of artificial teeth on plates. It is best, generally, for patients not to try eating at table until they have practiced on simple food, *on both sides at once,* and feel the *need* of their teeth at meal-time.

When they can do a little better *with* the teeth than *without* them, all is safe—"the Rubicon crossed." But don't over-do the suggestion of "perfect satisfaction" unduly soon.

Much experience induces me to insist on this advice to dentists—learning at first on both sides at once. And they 'll always gratefully remember me for it, too.

EXTRA SUPPORT TO ROOFLESS PLATES.

When you make a roofless rubber or celluloid plate, strengthen it across the front palatal surface with perforated gold or other metal plating.

To do this, you first fit your metal support to the model approximately; then, in packing, first lay down a thin sheet of vulcanite; then the perforated plate onto this rubber; and, lastly, another vulcanite sheet on the metal.

But this instruction belongs to our last lesson of this Course.

RETENTION OF ROOFLESS PLATES.

Roofless full plates will not generally stick up as *tightly* in the mouth as others, provided the full roof ones *fit just right, and that right fit continues.* But they stay quite *well enough* if fitted properly and persistently worn to easy adjustment.

In furnishing roofless plates, use careful judgment as to "indications" of the mouth and as to the good sense of your patient. Good ridges with prominent heels indicate roofless plates; and real *desire* for them indicates the wearer.

Few people having worn roofless plates would be content with any other. A roof *does* interfere with taste to some extent; and, if in no other way, by obtunding the sensitive nerves of the tongue by frictional contact, the same as work with a hoe handle will "harden" the fingers and hands, so a blind person can't well read raised letters.

Though I formerly argued, in the fashion, otherwise, I *now* "know for myself, and not for another," better.

Don't hobby-ride roofless plates, but make them unhesitatingly when a roof would be detrimental or unpleasant. *Then get a fair price for 'em.* This you can easily do with a reputation for making them.

Here the lecturer surprises the class by showing a roofless denture in his own mouth and chewing tough beef steak and ham, to their complete satisfaction.

PARTIAL UPPER IMPRESSION.

Now we come to the easiest of all impressions—partial upper cases.

Cut your tray low, so the material won't run up much onto the natural teeth. If it runs high, you may not know whether the over-lap holds the impression tight or whether it 's the suction to the roof that does it, in your test.

Trim your tray also a bit shorter behind than you want your finished plate, so you can later on post-dam impression with tongue pressure or otherwise. (Page 17).

Now be *dead sure* your tray and material can't part company. Better have some small holes through the tray, in addition to the melted-on, stick-tight lining heretofore shown. (Page 20).

Pile your water-warmed compound high up in the center and well forward, and lastly warm well over spirit flame; then take as shown for full mouth. Cool *thoroughly* with sponge held on under side, as shown before, and remove with caution.

Then get length (Pages 28-29) and post-dam (Page 39) as in full case. In partials you conform only when usual adjacent teeth are missing. Mind, now, we 're talking about *partials*. But, mark you, we 've had only a simple, easy case, where there were no leaning teeth nor bell-shaped crowns to interfere with removal of impression. "There are others." (Class responds: "Yes, there are others!")

LEANING TEETH AND BELL-SHAPED CROWNS.

In cases of leaning teeth and bell-shaped crowns, you 'll first use some of the "Perfection" material to build around and core them out cone-like-shaped at all points. Then varnish the coring and cover quickly with tin-foil. The varnish is to hold the foil, while the latter is a separator between cores and impression.

But, before you stick on the foil, cut a few sharp notches in the coring, *after* it is adjusted around the teeth.

Now treat your cored-out teeth as if they were fully real ones; and go on and take the impression accordingly.

Cool your impression well before taking it out of the mouth. Take it out; the coring will remain in place around the natural teeth. Then chill cores in place with cold water *thoroughly.* Split them in sections lengthwise with the teeth, then remove the pieces carefully with pliers and place them home in the impression.

This "Perfection" material breaks satisfactorily when cold. The cold water may be applied with syringe, cotton, or bibulous paper.

RECAPITULATION ON CORING.

In cases of leaning teeth and bell-shaped crowns, we take sectional impression; then join the parts and make our model. If a plaster model, we sometimes strengthen it with wire and pins. But better use metal models.

Of course, some of this may require careful manipulation, but no more so than many other operations dentists do and without complaint.

PLASTER IMPRESSIONS FOR PARTIAL PLATES.

A simple way, however, for accomplishing the results just shown is to first take the impression in modeling compound only *approximately;* then complete it with plaster.

To do this we take the impression and work it up-and-down, as it cools, slowly in the mouth. After taken out, we find it has "drawn" and, of course, doesn't fit. It loosely slips over the leaning and bell-shaped teeth, as expected.

When out and cooled we cut it off at rear for length of plate (Pages 28-29) and post-dam it. (Page 39).

Then cut out the modeling compound all over the roof to about 1/16 of an inch deep; and that part next to the leaning and bell-shaped teeth a little bit deeper; and say as far out as ¼ of an inch from these "crooked" teeth. (This out-cut is to be filled with plaster a minute later.)

When cutting out the modeling composition leave a thin bit of it standing next to the sockets of these leaning and bell-shaped teeth, to prevent the thin plaster from running down into the sockets while it is being spread into the cut-out, with a knife blade.

Now after we 've cut out our compound thus we scarify the out-cut so the plaster will stick to it, we moisten the gums and teeth with a half-and-half mixture of olive oil and glycerine so the plaster won't stick to them.

Now, the last care before taking the impression is to hurriedly replace our impression back into the mouth and out, to make sure the way is clear for the "pass-word" impression we 're going to take. (Pages 70-72).

Now, we 'll fill the cut-out with this creamy-like (not watery) plaster, turn it up-side-down and pour it about all out; add a little back onto the center and slip it into the mouth and push up till the natural teeth go fully down into their sockets in the impression.

Now we 'll hold it there, or let patient do so, till the remnant of plaster in the bowl is fully set and hard.

Here comes the "tug-of-war"! Remove it from the mouth, *oh, so slowly and carefully!* The plaster will hang almost air-tight and as

if glued to the natural teeth. And woe if the compound hasn't been perfectly secured to the metal tray! Of course you 'll have to go through a few educating come=loose scrapes to make you careful.

It 's wiggle and pull, and pull and wiggle, harder and harder, till "*something* gives," even when results are as intended. It is the film of plaster that has pulled loose from the approximate modeling=compound impression. The arrangement was made *for* just this intended breaking=loose; so no harm done.

We push the loose piece, or pieces, of plaster back tightly to place (with thin cement if necessary), and now have a perfect plaster facing to the entire approximate compound impression.

Our post=damming strip left, has forced the flowing plaster to equalize the mouth's inequalities. We 'll dry our impression, varnish it, and make our model; same as in case of full mouth, plaster or metal. To strengthen the plaster teeth on the model stick a carpet tack down in the center of the tooth socket in the impression before pouring.

Bear in mind, if you don't post-dam, you 'll probably have no fit at rear and no equalized roof pressure. Without post=damming, we 'd have merely an old=fashioned, hap=hazard fit; because, if the plaster can escape without pushing up the soft parts it will do so. That is, it goes where it meets least resistance. Non=flowing plaster might press up *too* hard.

Only a *properly* post=dammed rear will *insure* equal=pressure plaster fit over the roof. But this correct post=damming can be *known* only by test. If *too* strong, the tissues would push the denture down behind. And *that 's* what

often happens when using a metal tray turned up too high behind.

Still, as plates made by the old methods oftener fit up too *lightly* than too tightly behind, the manufacturers of turn-up-behind trays have that one mitigating circumstance as an apology; just this single one, hardly worth the mention.

TO TEST A PLASTER IMPRESSION.

Just before taking a plaster impression any where moisten the mouth (and teeth if any) with a few drops of a half-and-half mixture of olive oil and glycerine, to prevent adhesion.

To test for the correctness of an *old-fashioned* plaster impression, just trim it, after taken, exactly as you want your finished plate to be, length and all; metal tray and all. Then varnish it, and soap it to prevent adhesion (not suction), and return it to the mouth.

Have patient make the usual plate-wearing movements generally on the impression. If she can laugh, bite down on her finger on the tray, and can swallow without dislodgement, she could do so on a plate made from it. If not, then very probably not. But you 'd know one or the other in advance.

But you 'd have difficulty in so trimming and testing an "ancient," deep, long metal tray. But the *test* would *test* all the same.

But there 'd be further trouble with your old-fashioned plaster impression. After you had taken and tested it and found it wanting, you 'd have a whole lot of trouble to correct it.

You *could* do it, in a way, however, by our methods, by tracing-on compound, very-edging, conforming, post-damming and re-taking, with flowing plaster.

But, doctors, just stop and *think* and have a laugh over the fun you would have in taking your correctable impression in plaster, in a high, cheek-spreading, long, heavy-metal tray, with a regulation long handle.

PLASTER IMPRESSIONS IN MODELING-COMPOUND TRAYS.

Many years ago the elder one of the two Greene Brothers (the late Dr. P. T., of New Albany, Ind.) originated and taught for years (as a secret) the now common method of taking *first* an approximate impression in *bee's-wax* (in later years substituting modeling compound) and then using in *it* a thin layer of very soft plaster for the permanent impression.

It importantly amounted to having a better fitting tray than could be made of metal, and therefore was a *very decided improvement* over the old way of a common impression in a non-fitting tray.

But it was not a fully complete way, nor a fully correct one. It didn't give the exact height nor the length of the plate. Nor did it always give a valve-pressure fit up behind, nor around the heels, nor in the inner side of the top of rim. Nor did it pretend to give the fullness of the lip and cheek features.

Plaster, if soft enough to flow to the different parts where needed, will go where it meets least resistance; hence will run out behind and elsewhere without lifting the yieldable tissues up to the essential valve-pressure strain.

But no better proof is needed to show up the faultiness of plaster, especially in a non-fitting metal tray, than to take two or more impressions from the same mouth, in the same

way, and then make a model on one and try it in the others. It will seldom, if ever, fit another impression than the one it was made from; nor often fit any two very nearly alike. Think of the chance in getting them alike!

In order to get them alike, you 'd need to have two metal trays alike, mix your plaster each time alike, and give the same pressure at the same angles each time alike. This is a mathematical remoteness next to an impossibility.

In a modeling-compound impression and by our system, we 'll not ask nor care whether it 's like another or not. We don't judge an impression by its looks.

Our system is one of absolute test. We simply make *one* that will stand the practical test, and be sure of it. And, doctors, this can be done even with good bee's-wax better than with all plaster.

TO TAKE TEST IMPRESSION IN PLASTER.

To illustrate the principles here, I may have to repeat a little. We 'll go back and take up our finished, tested impression of modeling compound. Of course, that 'd be all we 'd *need* in a practical case. But now, say, we want it in plaster.

If it is air-tight (which it proved to be in the test), it 's also water-tight. Now, I 'll pour in a half-teaspoonful of water and push it up to place at similar strain as when tested. Now, *what becomes of the water?*

It 's a simple proposition. It can't pass our conformed rim and post-dammed rear-parts without strain effort. It can run all over the surface inside more easily than to strain through the dammed-conformed environment.

It will do more; it 'll even exert a *strain* inside equal to that necessary to force through its marginal hindrance. So, by the law (of following the line of least resistance), it must equalize the stress on all parts inside with that of the valve-pressed margin, before it can escape. Nor will there be any to escape unless there is more than necessary—a surplus.

Well, now, for instance and for illustration, we 'll command: "Hokus-pokus, presto change!" And our confined water becomes a sheet of ice. Take it out of the mouth, and we see a film of ice that, in its difference of thickness at different places, shows just what the impression lacked of exact equal-pressure strain before.

If the ice is the same thickness all over, it then shows the strain *was equal* all over the modeling compound before the water was inserted.

You now see I have made equal strain by hydraulic pressure. But suppose there had been some holes through the compound. Would the water have pressed up the soft parts and caused the equal strain? Certainly not. It would have run out through the holes, to follow the way of least resistance. That is all very plain.

Now let us play the same game with this thin, creamy, easy-flowing plaster. It will not flow quite as readily as the water did, but well enough; provided, of course, the same conditions prevail as did before.

We 'll take the same impression we had before. We 'll mix some quick-setting plaster to about the consistency of medium cow's-cream and pour into the impression, turning this way and that way till it covers all the compound up to within about an eighth of an inch of the top.

We 'll hold it there for a few seconds and sling it all out but merely enough to hide the surface. Then with the blade of our knife, or small spatula, we 'll trace=on a smidgen from same batch along the roof center from front to rear. Then quickly re=take with tremulous motion, at normal plate=wearing pressure.

In this re=taking we still use the long flexible middle finger of our right hand, of course.

If our thin=flowing plaster is in proper condition, the little smidgen of excess in the center will wave=move the rest all over the surface to perfect equalization of pressure. But bear in mind, if plaster even *begins* to *set,* in the least, before pressure to the mouth, there 'll probably be a failure; just as we 'd have had if we 'd have waited till the water had become mush=ice. Now, doctors, are you fully impressed that a ready=flowing condition of the plaster is essential?

And do you fully understand that it 's just as essential for perfect equal pressure that plaster must be *confined*—by conforming and post=damming?

Well, anyhow, let me clinch your understanding and memory with what has been called

"THE PASS=WORD FOR THE GREENE METHOD OF PLASTER IMPRESSIONS."

"Creamy=like plaster; in ready=flowing condition; confined; normal plate=wearing pressure, with wave=motion."

If rightly done, it 's not expected there 'll be any excess to flow out behind, nor over the rim; but should there be a little, just wipe it off outwardly, after taken, and use the compound edge only as the guide for model.

If an impression is taken in this way, it will, in some cases, fit technically better than the

"modeling-compound tray" did before; but seldom *practically* so. For *it* stood the test; and probably quite as well as the plaster addition.

Then, practically it makes little difference what material is used, just so all parts of the impression will stand requisite *tests*. And this should include the fullness of the lips and cheeks, too. *This* necessity has been the "mother of our new invention"—the tray with removable handle.

To test a "pass-word" plaster impression made in this way, you 'll let it dry, varnish it, or soap it, let the varnish dry, and then soapstone-powder it before the test.

If it doesn't stand the test, you haven't followed the five points of the "pass-word." You have *probably* gotten your plaster too thick, or let it begin to set before using it. Watch out especially for these two probable troubles.

I hope you now see the difference between this "pass-word" *perfect* way of taking a plaster impression and our old *improvement,* first introduced about twenty-five years ago; which was merely taking a common modeling-compound or wax impression and pouring plaster into it, and re-taking it.

My first "Eureka"-dance over an "improvement in plaster impressions" was nearly forty years ago, when I varnished and soaped a plaster impression and re-took it in creamy, soft plaster. And it *was,* indeed, a great advance step at the time. It has since been known as a "double plaster impression."

I make these remarks because some who have gotten onto our first, long-ago-introduced *improvement* jump to the notion that they "already know" our present *perfect* pass-word method. Our *perfect* equalization of to-day was

only hinted at in our old-time mere improvements.

WHY PLASTER AT ALL FOR IMPRESSIONS?

Some one of the class always asks: "Why use any plaster at all, after your compound impression stands the test?" Well, really *no use,* in full cases. And I show you this "pass-word method" mostly to expose the fallacies of plaster impressions, taken in the old way, with the old, ridiculous, non-fitting, mouth-stretching trays, with nauseating, choking surplus material.

And I don't think you 'll ever take many more plaster impressions for full *new* dentures, after you know how and have some practice in using this "Kerr Perfection" compound material. But you 'll frequently use the "pass-word" equalizing method in cases of upper partials where there are leaning natural teeth or bell-shaped crowns; also in refitting and renewing old plates.

In taking a plaster impression by the pass-word way, never use more than a spoonful of plaster. If careful, none of it escapes to "gag" or disgust the patient.

I may mention here, by the way, that if you, from the first, conclude you want to take a pass-word plaster impression, it isn't necessary that the compound should fit the *roof* of the mouth exactly—excepting at the post-dammed rear; for the five conditions of the pass-word will force a fit everywhere, anyhow.

We make a model in a thus plaster-lined impression the same as in a compound one, excepting that in the plaster we use varnish as a separator instead of lather or powdered soapstone.

And lastly: if you use the Greene ready-made, non-changeable models in any sort of

plaster impression, you fit them to it the same as to one of modeling compound.

A "QUICK-STEP" DENTURE.

If you wish to make a plate *quickly* and ask no better one than you 've been making of vulcanite, but still want to *know in advance* how it will *fit,* I 'll now show you how you can do it in from two-and-a-half to three hours, from start to finish.

I say "no better than you 've been making" because you 've probably been making plates that break; when a properly vulcanized plate of good vulcanite will not break.

The samples sent out by the manufacturers will not break; they 'll bend rather than break.

But the matter of vulcanizing will come up in the last one of our three lessons—the "third degree."

Supposing, for instance, your case is a full upper one: Fit your metal tray to the mouth—for *quickness,* by practitioner's method. (Page 18). Then soapstone it, so impression will readily separate from it.

Take a modeling-compound impression and *test* it, as I 've shown you. Then tap it out of the tray and cool it still more than you did in the mouth.

Now trim off the sides down thin-like; and, where you thus remove the compound, trace-on some setting up wax to stick your teeth to. Fairly good old-fashioned sticky-wax is made of three parts bee's-wax and one part rosin, melted together and strained into a porcelain plate. But the Detroit Dental Mfg. Co. are now making a much better article—"The Kerr Setting-Up wax."

Now stick your teeth onto the Setting-Up wax, seeing first that the centrals are in proper position. Then put it all into the mouth and ask patient to bite down lightly and slowly—"Slowly, Madam, slowly!"

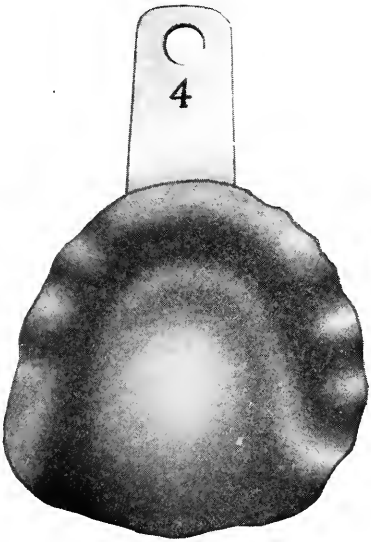


Fig. 7.

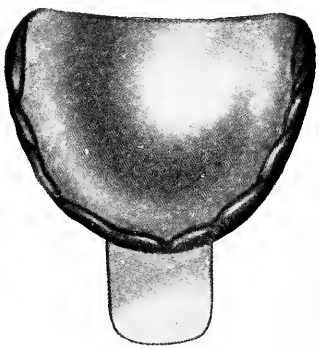


Fig. 8.

TWO UPPER PLASTER IMPRESSIONS.

FIG. 7.—Typical old-style, tissue-straining, non-tested plaster impression; taken in average deep tray, not fitted to mouth. A plate made from it would have to be guess-file-trimmed to fit moving muscles—next thing to impossibility.

FIG. 8.—Plaster tested impression, "pass-word" method. ("Creamy-like plaster; in ready-flowing condition, confined; normal plate-wearing pressure; with wave motion.") Modeling compound edge-rim accurately muscle-trimmed. No trimming of plate after made.

When the teeth show the desired length, stop her—"Stop, stop, Madam; stop there!"

You now have the show-*length* of the teeth.

Now, while she bites down steadily, use your fingers to adjust the teeth down onto the occluding lower ones. That is, adjust them to come together, just as you want them; and

also to fill out the lip as you want it—well, just as you always do in fitting an articulated set of teeth on a base-plate in the mouth. In fact, you *are* simply using the tested impression as a base-plate.

When the teeth are occluded and adjusted to the features, take the case out of the mouth, cool it thoroughly, and "wax up" the teeth as usual. While the waxing-up is being done, the impression should be kept cool inside by cold wet cotton in it.

Now place it back into the mouth, and, *if necessary,* re-conform and *re-post-dam* it.

When it looks and fits as you want it to, take it out and cool it well. Then pour the model; that is, fill the impression, and *at same time* half-flask it, in the usual way, teeth upward. Your case is now in first half of the flask, but the teeth are still on the thick impression instead of on a thin wax base-plate.

Next fit a Greene Occlusion Retainer over the circle (ends) of the teeth and plaster it fast there, to secure the teeth in position while you wax-up, handle and invest the case; and during the packing and vulcanizing processes.

Now, as soon as your model under, or *in,* impression is hard, take your pocket-knife and heat the point of it and cut down through the compound impression, all around on the palatal side of the teeth, and remove the compound.

Then slip in thin base-plate wax where the compound came from, and wax up all around on the inner side of the teeth. *Sometimes* we place a strip of modeling compound on the *outer* side of the teeth, and cool it, to hold them to place while we wax-up on their aforesaid palatal side instead of using the occlusion retainer.

When the case is waxed, you are ready to double-flask it. But before flasking don't forget to adjust a Greene Occlusion Retainer onto the ends of the teeth to prevent misplacement of teeth in packing and vulcanizing.

See that the metal edges of your flask-rims come together without rocking. This to preserve your occlusion.

Now, in filling the first half of the flask, be sure to fill the impression carefully *first,* without bubbles; for *that* becomes the model.

On opening flask, merely warm it, for it won't do to *heat* modeling compound; and there is some of your *impression* in there yet.

Finally, pack and vulcanize and finish as usual. As your impression gave you the length and depth of your plate, and the thin wax base-plate gave it the thickness, there will be little or no filing or scraping to do; so the finishing will be but a short job.

But *understand me:* Quick plates are justifiable only in cases of emergency and "pushency." They shouldn't be made from a commercial point of view.

To make a good rubber plate, more time should be used by the case in the flask *after the flask is cold,* to say nothing of the proper slowness in cooling. Every vulcanite case should be left in the flask over night to "season," if possible.

There are other ways to make quick-step dentures. But this is preluding and forestalling our third-lecture lesson.

REFITTING OF PLATES.

In all plate-work practice there is no more common need than refitting of plates. And yet in my travels among dentists, ten months in

the year for fifteen years, I've not found more than one in ten who knows even the old methods of doing this simple work; the exceptions being largely in favor of the old-timers in "mechanical dentistry."

When plates don't fit, they are usually "made over," at much loss of time and inconvenience and with the usual uncertainty almost inseparable from guess-work methods.

The old way of refitting a plate is simply to line, or "half-sole," its *surface*. And it is a partial success, as far as it goes. But it doesn't contemplate any re-adjustment of the teeth in any way, nor does it include the rim-and-heel-valve fit that I 've shown you on full plates. And these things that the old way doesn't include are among the most necessary of all. For the refitting of merely the main surface of a plate is often curing but a small part of the whole trouble.

Now I will show you how to refit the whole thing, including occlusion and position of teeth if needed:

TEMPORARY REFIT WITH MODELING COMPOUND.

I 'll assume you want to make only a partial refit, and that only temporary, till you get time to re-adjust and refit it fully and permanently.

This is done with "Perfection" modeling composition. You 'll keep on hand a supply of "wafers," thin sheets of it, say one-sixteenth of an inch thick. You can make them by simply pressing soft compound out on a slab of glass or marble with a bottle or common tumbler. But the Detroit Dental Manufacturing Company are putting this on the market. You 'll keep different thicknesses of these ready-made "wafer" sheets on hand.

To refit, you first scrub the plate clean and sand-paper, or scrape, its palatal surface a little; then dry it well. Then *heat* your wafer sheet of compound and lay it onto the plate and rub hard till it attaches perfectly thereto—not merely till it presses closely, but till it actually adheres. This must cover the *whole surface,* of course.

Next if needed for thickness, press another thin wafer onto this first one, still dry heat. Then dip the plate into hot water to soften the compound, and quickly put it into patient's mouth and have her bite down lightly on the teeth.

Do this two or three times, when you 'll have a good (old-fashioned) refit in "Perfection" compound that will remain for days or weeks, owing to the thoroughness of the work. And you have done it in a very few minutes. But don't forget to tell patient not to heat her plate in hot water nor otherwise.

Should the mouth change again, or the compound get displaced, simply re-heating in hot water and re-adjustment may be sufficient for another temporary correction.

This *temporary* refitting with modeling compound applies to metal plates as well as to vulcanite and celluloid; when done with proper thoroughness, of course.

But compound won't stick to the *edges* of plates; so this couldn't be even a complete temporary refit, though good as far as it goes. Complete refits must include the rim and heel edges of plates as well as the palate and ridges.

PERMANENT REFITS WITH VULCANITE.

To refit a vulcanite upper plate completely and permanently—rim, heels, and tuberosity, in-

cluding position of teeth and occlusion,—you first scrape the plate down thin and polish it; then see that the teeth stand as desired. If not, oil them and heat them with a mouth blow-pipe, and push and pull them to the positions desired, and hold them in place till cool. This relates mostly to the front six, but may include any others.

If there are any cracks in the plate from changing position of the teeth, pack softened vulcanite into them, as you 'd pack soft foil into a carious cavity.

Next see that the teeth occlude with their opponents as you want them to, whether the latter be natural or artificial.

Not necessary that the plate itself should even touch the mouth in this re-occlusion; just so that the teeth come together properly.

If any tooth is too long, either grind it off or take it out, make more room above it and then set it back up deeper into the plate. If one is too short, loosen it and pull it down to proper touch against its opponent. Fill under them with vulcanizable guttapercha or common vulcanite.

Your teeth now both set and occlude as you wish them to.

Next file the rim of the old plate down below where there is any under-cut, including around the tuberosities, and trace on enough modeling compound for a new rim; and cover the whole palate and ridge surfaces with a facing of thin compound, as in a temporary refit.

With your material thus in place, dip the plate into hot water and have patient take her own impression (in the old denture) by biting down lightly. Do this twice or three times if

necessary. When it will stick up in the mouth, that 's proof that it fits.

When the roof and ridge stand the test, then go on and very=edge the rim *all around.* Be sure each muscle has valve=tight room to move in; that is, relief without leak.

Then, next, you 'll *conform* all around, including behind tuberosities, as in an original impression.

Till now we 've left the most important step yet to be done: the valve=fitting of the posterior edge of our plate's palate.

If the old plate reaches back to where it should—that is, onto the yielding soft, and *not* onto the moving, straining soft,—it has been already post=dammed, in the taking of the impression, by biting. That is, the hard plate has forced the compound up against the soft tissues and made the needed valve=pressure strain there.

If it doesn't go back far enough, you 'll file it off square and trace=on enough modeling compound to make it reach into the stationary soft tissues. File it square and roughen it a little to vulcanize more length onto it.

When you get it long enough, with a little to spare, you then apply the rules for getting exact length, and post=dam properly, preferably by Method A—tongue pressure.

You now have the set of teeth, the "denture," as you want it. It stands the test of mouth movements.

Get your flask ready. See that its edges fit together in a way not to allow any tilting, for that might harm the occlusion.

Fill the lingual side of plate carefully with plaster, avoiding all air=bubbles, and at same time fill the first half of the flask with plaster, and push plate into it with teeth pointing down-

ward—after having adjusted and plastered on your Greene Occlusion Retainer. Then scrape off excess side plaster and varnish with Kerr separating fluid as usual in flasking.

Now fit on the ring of your flask and "double-flask." First carefully fill your impression, same as if you were making a model; for, indeed, that 's what you are doing—the very one you are going to vulcanize onto.

Let your plaster harden well, the remainder in your bowl being your guide. When hard, place the flask over a spirit flame or on a warm stove and, when you can feel it is slightly warm through, open from the heel first.

Your flask is opened, and your *model* is in the last half of it. Cover it with thin tin-foil and cut some small vents, and *it 's* ready for use.

Now turn to the set of teeth in the first half of the flask, secured by the occlusion retainer, remove the compound and scrape the old plate to get a new surface; then pack and vulcanize as usual. But leave all vulcanized cases in flask for several hours before opening, if possible.

It takes time as well as cool temperature for vulcanized rubber to crystallize to its best—to "season." Leave case in flask over night when you can. Quick vulcanizing, quick cooling and quick removal all help to make brittle and warping plates; don't doubt *that*.

If you 've followed instructions, your plate will come out clean and nearly finished—no filing, no scraping, no grinding of teeth, and little polishing. Remove the tin-foil with a thin amalgam of mercury and tin-foil, or tea-lead, made in your hand and rubbed on with your finger or a wad of cotton. Now you have a finished refitted half-soled" denture.

TO REFIT WITH PLASTER IMPRESSION—"PASS-WORD METHOD."

If you wish to take the impression in plaster, you simply first file off the old rim and heels and add compound, and very-edge and conform and post-dam, so as to *confine* the plaster; and then take it according to the "pass-word." (Pages 70-72). Of course the patient will bite down to get the impression, instead of you pushing it up in her mouth. This is a most excellent, easy, reliable and for a novice the preferable way to do it.

COMMON, OLD-FASHIONED REFIT OF RUBBER PLATES.

But if you want to make merely a common, old-way refit, you can do so by merely taking the impression in plaster or compound alone, without our improvement in muscle relief-without-leak and without our rim and heel valve-pressure fitting.

And you can do it in a sort of approximate, half-shod way by using semi-liquid vulcanite paste for taking the impression. But these preparations will not properly equalize pressure even on difficult plain surfaces, to say nothing of their utter lack in muscle-trimming and valve-edge-pressure qualities, so essential in good plate-work. They are poor substitutes for *good* compound or fine plaster. (Coarse compound and coarse, stiff plaster won't do at all.)

Until you "get your hands in" by some experience, and become an expert with compound, you may get the best results in refitting by using impression plaster according to the five points of the "password." (Page 72).

TO REPRODUCE PLATES FROM OLD ONES.

You can generally—in fact, nearly always—get a few more dollars, and do your patient more justice, by substituting a new plate in place of the old one, instead of refitting the latter. And it 'll take you but a few minutes longer and cost you but a few cents more.

First get your contract to refit, and go on and take your impression for that purpose. Then inform patient that while you can and will be responsible for the *fit,* you can't be for the breaking of the plate; since every time an old plate is vulcanized it becomes more brittle and more liable to break again. But you 'll put in all new material and then warrant the new *plate not* to break. (First-class rubber properly vulcanized at lowest temperature, long time, against tin-foil or gold-foil, will not break.)

A patient, after you have begun her work, will very seldom refuse to give you big pay for your *extra* few minutes in making her a new plate instead of refitting her old one.

To do this, you do just what I have described and shown you in refitting, from the first to last, up to the time you are to remove the material that constituted the impression, ready for packing. But, instead of removing the impression material and scraping a new surface on the old plate, you just remove the whole thing, plate, material and all, and pack for an entire new plate, instead of for a lining.

This is done by placing the half-flask, containing the set teeth, over a *hot* flame and heating it *hot,* and lifting out the plate from its imbedment; usually teeth and all.

As you lift it out, some of the plaster around the teeth may break loose; but just cement the pieces back to their places and go on.

Heat your teeth on the plate (after oiling them to prevent cracking) by pressing them back and forth over a small spirit flame, and pull 'em off in the usual way. Then stick each one back into its place in the investment, paying no attention to the little rubber that may remain fast to the pins—it 'll do no harm.

Pack and vulcanize just as for a new set of teeth. Then you have made a new plate, out=and=out, with *no* more work and but a few cents more cost to you than to have refitted the old rotten one.

But, now, bear in mind, if you know in advance that you 're going to renew instead of refit the case, you can and should use wax in changing the position of the teeth of the old plate (before taking the impression therein), instead of packing the cracks with vulcanite, as in refitting.

In this renewal, if the old plate didn't fit nor the teeth set right, *all* will be corrected together in the new plate.

In renewing it is an excellent way (in occlusion correction), to take the teeth all off of the old plate and set them back into their several places, using Setting=Up wax in their re=adjustment.

In this better way, on separating the flask the teeth will remain in their embedment, avoiding the scaling loose of plaster.

Of course, you will adjust over the ends of the teeth the new invention, *Greene's Occlusion Retainer,* before the first investment; this to prevent displacement of teeth by pressure in packing and vulcanizing and to avoid after grinding.

You can refit or renew broken plates in this way: Fasten the two or more pieces together

with common filling cement or elsewise, trim down the old rim and take the impression as I have shown you, either in "Perfection" material, or in plaster by the "pass=word" way. Then go on as you have been shown. If you use cement to fasten the pieces together, better strengthen with piano wire additionally. Or you can secure the pieces in place with compound on the lingual side of the plate, while you "very edge" and conform the rim and take the impression.

And bear in mind, in all these repairs, refittings and renewals you can test in advance for final results, the same as in testing full impressions.

THE GREENE READY=MADE, NON=CHANGEABLE MODELS.

To make sure of no change from your test impression by faulty plaster models, or mal=use of even good ones, you can use the Greene ready=made non=changeables in refitting and renewing plates, the same as in original work. And you should especially use them if you turn your work over to ignorant or careless assistants or other irresponsible helpers.

PRECAUTION IN REFITTING AND RENEWING PLATES.

N. B.—If your plate is thick, scrape it down on the lingual side and polish it before having patient take her impression; else you may get your new plate too thick. Also have your impression material soft enough that the old plate may show through it at places for the same reason just given.

Also see that you don't get too much rubber in your packing and that you have ample vents for surplus, to prevent over=strain in squeezing.

To prevent getting a plate thicker than your baseplate use the *Greene Roof Re-enforcer* shown in connection with the Greene Occlusion Retainer. Better always use the cloth plan in packing.

Also *think;* if you fail to get the metal edges of flasks together, your plate will be correspondingly too thick and the teeth that much too long somewhere. Most of the points of this lecture, now closed, will be further illustrated, in our next two lectures, in their application to other work.

LECTURE NUMBER TWO.

LOWER DENTURES.

FIRST: A MODELING-COMPOUND IMPRESSION IN DETAIL.

Well, doctors, we now come to what gives more trouble to dentists generally than any other part of plate-work. In fact, to most of them it 's the most difficult of all dental work. That is the making of lower full, or partial, sets of teeth satisfactorily.

In this clinic-lecture we 'll simply apply the principles laid down and explained in Section No. 1, so far as they are applicable. With these principles, in connection with others especial to lower cases, I hope to show you that it is as simple and easy to reach satisfaction in difficult lower cases as in difficult upper ones.

As we did in the upper, so we 'll commence with a modeling-compound impression and a full ("double") case.

In lower cases the common deep and long old trays, used in the usual old ways, are even, if possible, more absurd than in upper ones.

Such trays being longer and broader and deeper than our expectant denture is to be, you not only take in more area of the mouth than is needed, but generally distort the parts the plate is to cover.

Take an impression of a distorted mouth and, of course, the plate won't fit it when it resumes its normal shape.

With a too extensive tray, you not only press the soft and loose tissues out of place, but you strain the moving muscles. You take the impression of the moving muscles when strained down. Then, when you insert the resultant plate on them *without* strain, of course they rebound and lift it up.

But should you carefully not strain some muscles down by pressure, but mildly get them at normal rest, they will still lift up above the normal when strained in biting and chewing. (This is a new thought but a true and most important one, as will soon be demonstrated.)

Then you diagnose the case as one of the "Johnny-Jump-ups."

Then you file the plate off by guess to relieve the muscular strain, when it turns out, in most cases, that you 've cut off too much and have a *leak,* as well as a relief. What is needed is, again, *relief without leak.*

The old college professor's rule, "Trim your lower plate till you *think* you have spoiled it, and then trim it more till you are *sure* you have spoiled it," is a grave error, to put it mildly. Scores of them seem to think they individually originated the "gag."

Lower plates should cover all the territory compatibly possible, to have corresponding areal contact and consequential atmospheric pressure, or "suction." The less areal contact, of course, the less chance for atmospheric push-down.

The fact is, the very contrary of the "keep-on-trimming" advice is true. The more of the ever-present saliva bed that is covered by a lower denture, the better suction it will have; *provided the tissues are not strained,* of course. This is simply self-evident to any one who can reason at all.

But this matter of extension and limit is one to be dealt with an hour later on. For the present, we want to take a lower impression of the parts *in their normal position,* and without undue strain on the moving muscles.

In some—in fact, many—cases, we must unavoidably cover these straining tissues; otherwise our plate would be so "trimmed" as to have little or nothing left. I find many such ones. But if we have a system it must cover "ticklish cases" and all.

Now, to take an impression of a flexible tissue with room for reflex action is *the* problem.

We 'll illustrate by taking it first in a way almost sure to fail; which means the old way in common use. But, first of all, we 'll find and inspect the muscles most concerned.

Now, each one of you place your right index finger in your mouth, left side, for instance, as far back as you can get it, on the outside of your lower teeth. And, as you press down, open and close your mouth, and especially bite down on your finger—several times, please. Or you can put your fingers on the outside of your cheek, over the masseter muscles while you bite down.

I see you look surprised, for you know what it means. You quickly anticipate my talk. You have learned, before I tell you, just what happens when you use a long, broad-ended metal tray in taking an impression of a masseter muscle and its coverings.

You take it in a relaxed, at-rest, or even a strained-down condition. When you open and close your mouth, and especially when you bite *down* on your finger, you *feel* what irresistibly lifts it. It lifts up even though you bear down with several pounds' pressure.

Speaking practically from a resistance standpoint, you can and do take a lower impression in this way (with your thumbs) at many pounds' strain-pressure.

While you don't exactly push down on your extended metal tray at a twenty or forty pounds' strain, you do take that part of the impression in a way to give the masseter muscle and its surroundings so much capacity to lift the plate; and they use as much of the capacity as is necessary to lift it.

These figures are correctly illustrative, if not exact.

Why, doctors, I see some of you are so hypnotized with concentrated surprise that you are still holding down; down on the main muscle that causes so many of your lower plates to have the "Johnny-jump-ups."

Now, how are you going to take an impression over and *of* these muscles and avoid the jumps-ups in your plate?

Some one suggests the common old method of "relief" by cutting away the denture plate to give the straining tissues room to move in with freedom.

Yes, if you file it away enough, that will *relieve* it. But in cutting off your plate short at rear (or even at side-rear), you lose the most useful and most effective part that operates to hold it down; that is, the most effective part when it is properly fitted and left there.

By filing it off, you lose not only just so much area of contact for atmospheric pressure, but lose it at the longest and most powerful end of the lever.

The farther back a plate reaches, the longer your lever is; and the more surface it covers, the greater the power *at* the long end of the

lever. This is simply mechanical philosophy that no one will gainsay; assuming the fact that the front teeth constitute the fulcrum in the calculation.

Assuming there is no under-push upward, like a straining tissue, it would be a matter of only a little atmospheric, or other weight, to prevent rear tipping.

If the plate is left long, or broad, saliva gets under it and operates like water between two pieces of glass, when they "stick" together—*according to area* of contact.

Hence the mechanical value in the length of a lower plate. But the condition is, there must be no uplifting understrain to offset the atmospheric down-push, of course.

TO AVOID STRAINING THE MUSCLES.

Then let 's take the impression in the first place, so as not to strain the masseters, or other muscles.

The first requisite in this is to *fit the tray to the mouth.*

We 'll take, if need be, an old, soft-metal tray and with curved plate-shears cut it off behind; and trim it down in front; and narrow the sides; until it is even shorter at rear, and shallower everywhere, than our coming finished plate is to be; *especially* shorter at rear. For we don 't want it to run back onto the condyles, nor onto the troublesome masseters at their outer sides. If we strain things about the condyle vicinity with only our *material,* we can correct *that.* And it is only a correctable impression that we are preparing to take.

Besides reducing the old tray in length and depth, we 'll also cut its handle off to about

three-quarters of an inch; then thin *that* down, so as to reduce over-lapping weight and avoid tipping. Better use the Greene-Kerr trays that need little cutting down and no cutting off.

A long, heavy handle to a lower impression tray is about as useful (and about as much in the way) as a rhinoceros's horn-snout would be on a pet pug's face. How nicely the comparative rhinoceros-horn would teeter the puppy! And how vigorously a long, heavy handle would teeter a lower impression when you let go for a stay-down test!

And yet our "best men" never kick to go into a supply house and find none but horn-snout-laden lower impression trays in the well-filled show-cases.

The metal tray should fit the alveolar ridge (or over where it used to be) approximately well, so we can use a small amount of impression material.

Such a tray, with minimum contents, is a great convenience to the dentist and satisfaction to the patient. All told, our bulk shouldn't be twenty per cent of the average in common practice, by old methods.

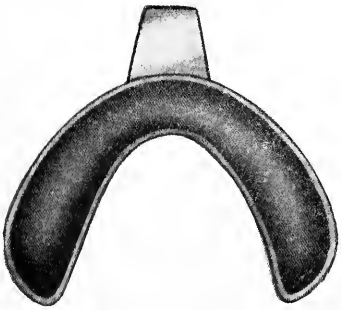
As in the upper case, there are *two ways* of fitting a tray to a lower mouth.

The first is the *student's* way—a good way, too, for anybody.

In this way, with a m e d i u m tray ("dehorned" over masseter region), we first take a hurried, approximate impression in modeling compound, and cool it somewhat in the mouth with cold water, thrown in with a piston syringe. Then, with quickening salt, or better, sulphate of potash, make a hurried, approximate plaster model. Then with the thumb and fingers, or pliers, bend the tray to fit it approximately,

LOWER TRAYS.

Fig. 10.—ABSURDITY.
Too large for any mouth.



For large ridge.
Fig. 11.—COMPROMISE.

Fig. 12.—REASONABLE.
For medium size.

[These cuts represent three-fourths of full size of lower trays.]

turning the heels of the tray up a very little, to prevent metallic rear-gouging.

The second is the *practitioner's* way—which is quicker, but less accurate; but usually good enough. This is to get right in front of the patient's face, and with the right hand enter the right wing of the tray into the mouth, as a farmer does the rails of his "bars" (gate). Then let go of the handle, and with both index fingers spread the lips a little and look in.

If we let go, the tray will drop down and center itself over the ridge, or place of the ridge, by cheek and tongue guidance and its own weight.

We 'll examine its needs and take it out and expand or contract its wings, and turn its heels up or down till it approximately fits the jaw.

Never attempt to hold the tray down in place to inspect it, but let it seek its own position, freed from cheek-and-lip hindrance.

The next step, after fitting the tray by either method, is to

TAKE A CORRECTABLE IMPRESSION.

By "correctable" I mean one where no part of the metal comes in contact with the tissues of the mouth. We are going to correct up this impression by mouth and tongue movements on sensitized surfaces; but we couldn't thus correct a metal tray.

Students and novice practitioners are advised to take this correctable impression *from the approximate model* that they first fitted the tray to; then afterwards fit it to the mouth, as now soon to be described.

To take the correctable impression from the approximate model is very simple. First

rub the model well with pulverized soapstone. Then make a little roll of warm modeling compound in your warm water wetted hands and press it carefully down onto the prepared model. Then press the fitted tray down onto the compound.

While we finger-press the compound around the edges of the tray to the model, we 'll not forget to turn a little of it over onto the back, or reverse side, of the tray, and touch it with our finger, dipped in cold water, to clinch the tray and compound together.

We have here now taken a correctable impression of the approximate model; the next thing is to separate them. We must *begin* the separation before the impression material gets anything like hard. And right here is where some of the class may get things mixed up a little. *Watch close and listen carefully!*

While yet warm, we 'll dip the whole thing into cool water for a *very few seconds,* to chill the impression a little. Now, we 'll take it out and quickly pull it *partly* loose from the model at the heel; hurriedly re-dip it back to let the cool water *under* it; jerk it out and instantly re-press it back *tightly to the model;* and stick it back to *fully cool.* After cooling, we 'll separate carefully.

If we at first let the compound cool fully without this precaution, we might find the separation difficult in some cases.

And there are a few instances where we have to "core out" under-cuts before taking an impression of a model. In this, we simply *first* fill up the under-cut with compound, and cover *it* with tin-foil, and soapstone the foil; then go on and take the impression as I 've just described.

Doctors. be sure you understand me in separating an impression from a model, when we wish to preserve the impression, as we do in this instance.

Don't attempt to take an impression of a model without first soapstoning, or otherwise treating it, to prevent adhesion; and then don't get your compound too warm—never *hot.*

We now have a correctable impression from the approximate model (student's way); and are ready to adjust it to the mouth, in all its parts and points and details—soon to be shown.

But, before we show you how to correct and *adjust* a student's correctable impression to the mouth, we must return to the *practitioner's method* and show you how we get said impression directly from the mouth. The *corrections,* after taken, are similar in both methods.

The practitioner's way is the shorter one, but not as simple nor as easy as to take it from the approximate model, outside of the mouth. And, only for the inconsiderable extra ten minutes for taking the student's approximate impression and making the approximate model from it, I 'd always prefer the round-about way of getting the correctable impression.

I have learned, mostly, to disregard a few extra minutes of work, for convenience, comfort, better results, and avoidance of future annoyance; especially in difficult cases.

PRACTITIONER'S CORRECTABLE LOWER IMPRESSION, DIRECTLY FROM THE MOUTH.

STEP NO. 1.

Our metal tray has been fitted to the mouth. (Page 93). Now we'll take a small hand-made roll of warm compound—for a medium case, about one-fourth inch in diameter—and place

it onto, or into, the face of the prepared tray. (Tray should have some small holes through it, to help fasten the impression to it.)

The roll is purposely an inch or more too long; so we 'll double the length-surplus over onto the back, or reverse side, of the tray, press closely, and finger-touch it with cool water, to prevent its dropping loose when we turn it over to take the impression in the mouth.

The impression material being fastened to the tray and finger-fashioned ready for application, we now further warm it till quite soft, by passing it back and forth over our hand-lamp flame.

Before entering it into the mouth, we 'll look the patient straight in the face and say: "Madam, this is warm, but don't fear; it will not burn you." This forewarning is often necessary to forestall a false suggestion of pain. Form you a *habit* of forestalling suggestion, and save both yourself and patient annoyance and trouble. *Don't fail to form this habit.*

And let this suggestion include the gratifying fact that you 'll not *choke* her—a popular fear of impression-takings. She 'll smile at you!

We are standing, or sitting, right in front of our patient, who is seated, preferably, in a common chair and in our impression-room, or *clean* laboratory. Our small alcohol-gas water-heater and all the rest of our needed conveniences are on our little table with cleats around its edge to prevent things from slipping off.

This little impression-table, with its contents, is at our right hand and within easy reach.

With our patient sitting up straight and head in natural position, we hold our loaded tray by its short handle between our thumb and finger (right hand) and enter first the right-

hand wing deep into the mouth; then push it to the *right* and enter the left wing.

As soon as both wings are well in, we 'll *let go* and *instantly* spread the cheek-lips a little with our index fingers, both hands; that is, we 'll pull forward a little and spread lightly.

Now, right here, doctors, let me, even in advance, caution you not to make this lip-spreading "stunt" too roughly—as you 'll be apt to do. Spread the inner cheeks more than the outer lips. Practice it first on each other's mouths, take your scolding kindly, and profit thereby.

This light spread-shaking of the lip-cheeks gives room, and our tray centers and settles down instantly, of its own weight, guided by the tongue and cheeks, to its proper place.

It is in position. Standing, or sitting (I repeat), right in front of my patient, I *quickly* place my two index fingers on the wings of my tray and wave-press down gently and lightly; *always lightly,* on the very soft compound.

(I expect to repeat several times in this Course that an impression should be taken at about the strain the plate is to be worn. A little reflection will tell you why.)

When it 's down to place, I hold it there a few seconds to chill a very little. Now watch close while I press the sides of my impression to place. I lay my left index finger on top of the left wing of my tray *longitudinally*—not *cross-wise.* At the same moment I put my left thumb under the handle—or, rather, lip—of the tray, to steady it, if needs be.

While I thus hold the impression down with my left index finger, I run my right index finger around on the lingual side (under the left side of the tongue) and press the soft, projecting compound under the edge of the tray, and back

behind it, onto the condyle, and on the outside of it, over the masseter muscle—well, all around the condyle lightly.

Now, change hands, and in exactly the same way do exactly likewise on the left side. Get this all clear in mind; then we 'll go ahead. (Some one of the class is asked to explain this far; then we resume.)

I 'll now hold the impression down with my two index fingers, one on each side; and, while doing so, I'll straddle the cheek-lips (on both sides of the mouth) so as to get the cheek between my *index* finger and my long *next,* "middle," one.

Observe closely: my *first* fingers are on the inside of the mouth, holding down the tray, and my second fingers are on the outside thereof. While I work down on the cheek, *outside,* with my long fingers, I also at the same time work down the outside of the under-lip, in front, with my thumbs. Why, it seems as though our hands and fingers were made on purpose to take a lower impression in this simple, easy "Greene" way.

Now, my impression is pressed down to place all around, on both inner and outer sides of the alveolar ridge, and also at the heels. But it presses too hard, probably, on the active muscles, especially the masseters.

And now, here, doctors, is a pointer of great value to any extensive plate-maker. With my front finger still holding the impression down, and the modeling compound still warm, I say: "Madam, open and close your mouth and bite down on my fingers, *quickly.*" As I give her the command, I look her in the face and kind o' obey it myself, to prompt her movement.

When she opens and closes her mouth and

bites on my finger, the muscles aforesaid lift the material, projecting beyond the metal tray, up enough to give full relief from maximum strain, but no more. The contact is still enough that the little space between the lifted compound and the flesh (maximum and minimum range of play) will fill up with saliva, and thus make conditions for atmospheric pressure, or so-called "suction."

After she has obeyed my command and the strain is lifted from the masseters and condyles, with my fingers still on down-holding duty, I have her also work her lip and cheeks a little, to approximately relieve, maybe, other strained tissues; especially the *levator labii inferioris.*

Then I give her another command (for which she has previously been prepared, and instructed to obey it): "Madam, now squirt your cold water into your mouth quickly!" This is from a little syringe in her own hand; or in the hand of an assistant, if one is at command. It is to cool the impression.

After a half-minute's cooling I remove my correctable impression from the mouth; and the whole procedure hasn't taken much, if any, more than a minute or two of time.

But we 'll look at it now, and see whether it is really a correctable impression or not. If, by some mishap, the metal edge, or other part of the tray, should show through, it 'd *not* be a correctable impression. The movements of the muscles can't correct *metal.*

So, if any metal is in sight, we 'll just cut it all away with knife or file sufficiently, and trace compound thereonto; then it will be *correctable,* by muscle-trimming.

Well, we now have about what we 'd have had by the student's method, *plus* the approx-

imate relief of masseters, just described. In either case, we are now ready to proceed to correct what, after all, is so far only a modeling-compound tray. The correction will be the transformation of this tray, by detail, into a test-impression.

You have now seen done and heard explained the *first step* in a full lower modeling-compound impression. To further impress it on your minds, some one of you may now read it as "Step No. 1," on this list of printed notes, that each one of the class is to keep for future reference. (Later: This *printed* work will now, of course, supersede the former note system for reference.)

STEP NO. 2 IN LOWER IMPRESSION.

"Trim it approximately with knife, leaving it a little too long, and fully deep."

This consists simply of the warming of the edges a *little* over the spirit-lamp and shaving off, with a *sharp* knife, what is evidently a surplus.

Bear in mind, this knife-trimming is only a crude approximation; but about such as dentists usually depend on for exactness in the common, old method of guess-trimming of plates.

Well, now that our correctable impression is only a very little larger than the finished plate is to be, and will not distort the mouth by its size, or depth, or length, we are ready to correct its center over the alveolar ridge; or where the ridge used to be, if absorbed.

It may really be correct there now, but we don't know it; for it covered more area than we needed, and that may have strained and distorted what we *do* need. So we 'll go through the motion, and no harm will be done, anyhow.

STEP NO. 3 IN LOWER IMPRESSION.

"Equalize the center by hot=stream, normal plate=pressure, and wave=like motion."

We 'll pour our ten=penny hot=stream from our little spout=cup into its center till it is quite soft—just on the safe side of the burning=point. This softens the center well and deeply.

Then instantly we dip the whole thing into hot water and out *quickly,* to mellow the edges a little, but very shallowly. Then dextrously, but carefully, return it into the mouth (left side of mouth first) and as quickly wave=press down with our two index fingers *lightly.* Or better have patient bite down lightly onto prepared dummies, or mouth=rest.

We hold it down half a minute, when, more than nine chances to one, the pressure is equalized; if, indeed, it needed equalizing. But do this properly a second time, and it is sure to be—which is to be test=proven a little later on.

Of course all this has to be done *quickly,* or it will be a failure. It may take some practice for *some* of you to do it quickly enough for success. As in writing, you first learn *how* to perform these little manipulations and *then* how to do it *speedily.*

One "D.D.S.," with a sigh, once upon a time voluntarily admitted *he* "wa'n't *fitten* by natur to do sich fine work and so quick." He'd "ruther practus his *specialty* an' pull an' plug teeth an' do crown= an' bridge=work." Ha, ha, ha!!

Well, now, you may read your note again, as before, what you have seen done and heard explained, as the *third step.*

I 'll only add that, if we took our correctable impression by the practitioner's method,

and *carefully,* it isn't probable any change has been made as to the *fit* by this equalizing step. But, if any at all, it isn't probably more than the thickness of the thinnest blotting-paper, at the most. An *expert* can do this by quick hot-dipping the whole impression, instead of spout-cup pouring.

STEP NO. 4 IN LOWER IMPRESSION.

"Bite on dummies, for jaw-rest."

We will now *prepare* to very-edge the outer rim of our impression. As before, this muscle-trimming is done, again, by lip-and-cheek and tongue movement, on sensitized surfaces.

To very-edge correctly, and hence successfully, the impression must surely be held down to place while the muscles *do* their trimming. This is absolutely essential; so we must plan to hold it down. And it must be down without our own, or our patient's, finger-help; for that would interfere with the normal action of the moving tissues that do the trimming. Indeed, the patient wouldn't likely make the necessary movement with my finger in her mouth.

So we 'll put a jaw-rest on the reverse side of the metal tray for her to bite down onto, while she makes the scientific, automatic, self-trimming movements.

See! I will take this little roll of warm compound, about three-fourths of an inch long, heat its surface on one side a little, and stick it onto my metal tray—the other side from the impression. I 'll put one on each side, of course. They are "dummies." I 'll warm the *edges* of my dummies.

"Now, Madam: When I put this into your mouth, I want you to bite down onto it *quickly.*" She gives one snap and my dummies have

the marks of the upper teeth (or her gums, if she has no teeth) on them. That is, we have had her *"bite on dummies for jaw-rest."*

So you now read "Step No. 4," after you 've seen it done or heard it all explained in detail.

STEP NO. 5 IN LOWER IMPRESSION.

"Very-edge (muscle-trim) outer rim and heels, one side at a time, by swallowing and lip-and-cheek movements, while biting down on dummies."

I will, for instance, very-edge on the *left* side of her face first. I 'll warm the very edge of what is the *right* wing of the impression when the handle points toward me, and slip the opposite left wing (not warmed) into her mouth *first;* then pull her left cheek over to her leftward, and enter the warmed edge last, without cheek interference.

Immediately she bites down onto the jaw-rest (dummy) and swallows, and sucks her cheeks and works them energetically. In from fifteen to thirty seconds I have the outer side of my impression accurately trimmed, and also cut off—or, rather, turned up—for the right length at rear.

The deglutitory motion did the up-turning for the length of the coming plate. And *it* will be just this long, because the model from our up-turned heel will make it just so. The length of a lower plate, same as that of an upper one, may be of exceeding importance.

But, lest this first trimming may possibly not be all that is needed, I 'll repeat it till no further show is made by the cheek and swallowing movements. Do this rightly, and your trimming will be exactly correct.

Now, I 'll similarly warm the other side and oppositely enter *it,* and have the same movement made as before. And, if necessary, I 'll warm special places and make a special trip into the mouth to particularly muscle-trim the lower lip-strain and sharp muscle strain by the movement of the *levator labii inferioris* and strong muscles.

You well know how commonly this *levator* breeds the Johnny-jump-up malady in lower dentures. But this pesky lever is a wise mechanical surgeon; it knows *just where* to trim a modeling-compound impression, or plate, if it has a chance.

Well, we are done with the outer rim; let 's get to the inner one.

STEP NO. 6 IN LOWER IMPRESSION.

In the language of your printed note, let us *"Very - edge the inner rim and inner heels, all around at once, by swallowing and by vigorous tongue movements, while biting down on dummies."*

Since we are getting onto our job of scientific trimming, this is easy.

I will this time warm the *inner,* or lingual, rim, and all around at the same time. But, as the muscles and glands under the tongue, that are to do the mechanical surgery, are often very lax and soft and weak, we must now have our inner rim quite soft indeed—just a few degrees on the cooler side of the scorching-point, in some cases.

After blistering your own mouth, and especially that of your patient mother-in-law a few times, you 'll learn to make this fine line of thermal demarkation to an amazing nicety.

(Don't shudder at this prospect of vivisection in the interest of prosthetic dental science.)

You must learn to muscle-trim the lingual rim so it will safely set down, without strain, into the sub-lingual saliva pool, to give it suction.

To my patient: "Listen, Madam, to what I 'm going to say. The instant I slip this edge-warmed impression into your mouth, I want you to bite down on our dummies and *swallow,* and throw your tongue all over your mouth as vigorously as you can. Act quickly and fast!" (Better, in some cases practice Madam a little, in advance, in the movement.)

She has obeyed; we 'll leave the impression *in* a few seconds to cool and then take it out and knife-trim off the turned-up edge, or a part of it. We 'll use common sense and simply repeat what we have done till no more surplus turns up by the same energetic action; then we 'll have an accuracy of trimming not to be reached in an hour, or a day, of trials by guess-trimming off a plate after it 's made.

You say: "All this is migthy particular work." Of course it is; but, after all, not more so than many other things you have been doing. Nor is it as particular as what your wife has often to do when she picks the naughty motes from your eyes.

Can you afford to be as skillful and as artistic in your boasted professional manipulation as your chiropodistic artist has to be? If not, better turn your impression-taking over to him. He is used to being "particular" in *his* work. But, seriously, it will not seem to be so when you get accustomed to it.

STEP NO. 7 IN LOWER IMPRESSION.

"Conform lingual side by steady tongue-pressure, and cool well in place, with syringe, through notch, while biting down on dummies."

By conforming, you know, we mean warming slightly and pushing to place with steady, gentle pressure, and cooling while under *such pressure*. To press-to and then remove and let the material rebound wouldn't be conforming worth a penny.

It must be at least fairly well chilled while in place, under gentle strain, and then well cooled before removal. Don't tire of this repetition; you 'll "need it in your business."

But let us go on and conform these lingual sides of our impression. In our sub - lingual very-edging we prevented air from passing in and out *under* the lingual edge, by its reaching onto and into the sub-lingual saliva pond. But there is room for some, and *is* already some, *behind* it. So we must get that out; or, rather, we must have our patient do it.

Before we put her at it, we 'll cut a little notch in the dummy, on the left side of her face, so we can squirt some cold water under her tongue, through our syringe point, to cool the compound, *while under pressure.*

I repeat: *"Now, Madam, listen to what I 'm going to ask you to do.* As soon as I place this into your mouth, I want you to push it up close against your gums with your tongue, using gentle, steady pressure. Push all around and hold it to place till I can squirt some cold water through this notch and thoroughly cool it."

This she will easily and readily do. Her soft tongue will give an even, *equalized* pressure on the harder and the softer parts, nearly the same.

I will here remind you that we are now taking this part, as we have taken all other parts, at about right-angle pressure; which is almost essential in modeling-compound manipulation.

Plaster of Paris (by the "pass-word method" only) pushes in all directions alike, and thereby equalizes. But modeling composition—the best of it—hasn't much flowing quality, at a sufferable temperature; therefore it must be pressed at right angle against the soft places, which yield according to their needs.

All right; we 've now so pressed the lingual side of our impression and cooled it through the prepared notch. Now, we have valve-pressure on all the soft parts, so air can not pass, unless our impression (or plate) is moved by force; and this common force has been prevented by muscle-trimming.

We have here done a most important thing in making a lower plate—conformed it to the lingual side of the alveolar ridge, assuming it has a ridge. If no ridge, conforming is not needed. If deep ridge its cheek side will need conforming by finger pressure.

STEP NO. 8 IN LOWER IMPRESSION.

"Take impression of fraenum by quick lip-licking, and re-touch while holding down with both index fingers. Don't bear hard nor press downward when re-touching."

Just before warming the spot of frænum contact on the lingual rim of my impression, at the side of my small spirit-flame, or with my mouth blow-pipe, I say: "Mrs. Jones, I 'm going to hold this impression down myself this time, with *my* forefingers, so you can use your tongue quickly and freely. Immediately on this

going back into your mouth, you will please lick up *under* your *upper lip* vigorously, and quickly draw your tongue back to its place."

In doing this, when the material is quite soft, she simply muscle-trims out room for the frænum to move freely in, when she licks her lips, in wearing the plate. For, of course, again, the plate is to be a duplicate of the impression.

But, as she *may* trim out a little *too much,* so as to leave a little leak (at the sides of the frænum), I hurriedly dip my finger into cold water, and reach over under her tongue, and gently pull back what may have been overdone by the muscle itself under too vigorous tongue movement. She musn't loll her tongue *out,* lest she frænumizes too deeply and gives relief *with* a leak.

I will here give you each a sample retouch in your own mouths, using a different finger, of course, in each case. You feel my finger pressure is light, but steady and not downward.

Should you use much force in retouching, you 'd undo what you 've aimed to do. You merely need to pull back to place a "leetle" compound that may have been pushed off from the ridge at the *sides* of the frænum, so as to stop the air-leak.

STEP NO. 9 IN LOWER IMPRESSION.

Here is your note:

"Test for fit. Dip the impression in cold water; place it in the mouth; and bear down with index fingers or have patient bite firmly for half a minute. If it sucks fast, or even if it comes loose with a little noise, it 's O. K.—not otherwise. If no blunders are made in following up all after-work, the plate, after it settles, will always fit even better than the impression tests."

Any perfect impression, on a ridge of almost any size, will have more or less so-called suction after pressed down a little while. And any impression ought to have a *little* of such, though not always enough to hold it down much.

Nor is it at all essential that a lower plate should have strong suction. Even though it should stick tightly (as most of them will for a while), the tissues will, in time, be absorbed and the plate lose its down-hold.

(We 'll have a "Joker" substitute for a lower suction before we are done with it.)

But in any test I want at least to hear the impression make a little "squashy" noise in working it up and down, by its short handle, as proof that I have a fit. If it didn't make any noise, I 'd conclude I hadn't the best fit that could be made. So I 'd set about for an improvement.

I 'd not take another impression, however. If I were to make one hundred sets of teeth, I 'd take but one impression for each case And I 'd correct each one till I got my desired test.

If this one doesn't test, I will resort to Step No. 10.

STEP NO. 10 IN LOWER IMPRESSION. A REVIEW STEP.

This, if needed, would be a review step. I would first try the conditions of Step No. 9 again. Then, still failing, I 'd repeat the operation of No. 7; then No. 6; and then No. 5, in turn (in their backward order), till I found the fault *somewhere.*

But I 'd look especially after the masseters and lower-lip strain; not forgetting the sub-

lingual tissues, in case of flat gums. But in cases of much alveolar ridge I 'd rather expect to find the defect in poor conforming of the lingual edge of the impression to this ridge.

But, anyhow, doctors, I 'd not take another impression; and then another and another, after the old way. I 'd adjust and correct up parts of the same one in detail until I got a *test* that would, *in advance,* warrant a fit of my denture. A quick correction can usually be made by hot dipping and rebiting on it in the mouth.

Then I would polish its edges, if not its entire surface, over a spirit-flame; and go on and make a hard surfaced polished model that would mold, or swage me, a duplicate, almost finished, denture.

If of plaster, this model is made, of course, by the "full saturation" way of mixing and pouring. That is, the correct quantity of pure, tepid water with the right amount of *good* plaster, mixed thoroughly but *quickly* and "poured," or placed, before it begins to harden.

To impress an important point, I 'll repeat: Stirring plaster (or any other crystallizing substance) after it has commenced to set much, breaks the forming crystals and causes rottenness of the product.

A PLASTER LOWER IMPRESSION.

If for any reason, real, imaginary, habitual, or otherwise, I should want a plaster impression, I 'd now use this completed modeling-compound one as a tray to take it in. I 'd pour some very thin, creamlike plaster (impression plaster) into it, sling it mostly out, and take my plaster impression *quickly* with light index-finger-pressure and wave-motion. The

wave-motion is to cause the better flowing of the plaster.

At the same time I 'd have the patient go on and repeat all the lip-and-cheek manœuvres she had made on the compound; and especially bite down a little on my fingers or the dummies to provide for massiter uplift in action. That is to say, the muscles would push the plaster out and prevent strain there. Biting down is an excellent also correct way for the ridge in an impression.

If any careless excess of plaster should overflow the muscle-trimmed edges of my compound tray, I 'd rub it off before making my model; and use the modeling-compound edges as my guide, both in pouring, and trimming my model.

But, doctors, there would seldom be any good reason for the plaster; for I couldn't improve *such* an impression, even technically, unless I could confine it (the plaster) and employ the conditions of the "pass-word." (Page 72) Still, as it requires less skill to equalize with cream-like plaster than with the spout-cup, it 's the best way for a novice—*after the modeling-compound impression has been otherwise finished.*

The making of a model here would be the same as in the upper case, whether I used all plaster, or my non-changeable approximates, and faced them with plaster.

But I 'd make it, in either case, immediately after getting a satisfactory test of my impression; or else keep the impression in cold water till I could make it. (Another point that 'll bear repetition.)

And though "this is neither the time nor the place" to give the valuable secret, I can't forbear to tell you it is best always to make a plaster model as thin as you well can; or at least trim it down thin after it is made.

Then use metal, or other non-changeable plates of some sort, *under* it, when necessary to raise it up in the flask, in packing.

This, doctors, is a pointer worthy of a gold-plated safety-pin in it. You have doubtless spoiled many a case, as to its fit and occlusion, one or both, by putting worthless, mushy plaster under your plaster model, to raise it in your flask. Have you ever thought of it? Doctors, *think!*

This all, however, more properly comes up in our "third degree," when the whole model-smashing matter will be reviewed.

PARTIAL LOWER IMPRESSION.

This is, to some extent, a repetition of the principles involved in the full lower; but it takes in still more.

We will first take a case of, say, six remaining anterior teeth. I prefer a tray with a metal-closed space, or place, for the natural teeth to project into; but open ones can be closed with modeling composition.

See, here is a common, ridiculous, long-handled one that we 'll trim up and down. We 'll "transmogrify" it, as some call my bold surgery on the old-fashioned trays.

We 'll cut off the long handle to, say, three-fourths of an inch in length and hammer it (the shortened handle) down thin to get rid of tipping weight and inconvenient bulk.

We 'll further trim down its sides and cut it off at the rear, the same as for a full lower; and especially trim it off clear down to the handle in front. This last in order to take the impression of only the ends of the front natural teeth on their outer surfaces.

We 'll want to change this impression off=and=on; as we want room to look under and see the teeth properly re=enter into their respective sockets in the compound.

(We have recently perfected a set of trays, including this needed one, with removable handles; manufactured by the Detroit Dental Manufacturing Company, Detroit, Mich.)

As the natural teeth here act as guides, to prevent side=slipping, it is even easier to take a partial impression than a full one—in modeling compound.

After the tray is center=fitted over the teeth and alveolar ridge, as in the full case, we 'll take a roll of material from our hot=water=pan and shape it into place ("fashion" it) in our tray, as we did before in the full case.

We 'll now warm it over our hand=lamp flame, as in the full case before. And we 'll take this partial impression in every respect as before in the full case, through to the finish of it.

All *that* was shown you in such detail as to hardly need repeating in the partial case; provided the teeth are so shaped and stationed as to let our impression in=and=out of the mouth *without "drawing."* In fact, in an easy case like this, it requires but a very few steps in=and=out to do all I have told you and shown you.

We are almost certain to get a correct impression of the alveolar ridge every time. So the most there is to it is the muscle=trimming for relief = room, especially at and about the heels; and the conforming on the lingual side. *Relief=without=leak*—and the story is told.

"Yes, but," emphasizes one of you, "what about leaning teeth and bell=shaped crowns,

where the compound *must draw,* or it 'll not come out?"

MODELING-COMPOUND IMPRESSIONS WITH LEANING TEETH AND BELL-SHAPED CROWNS.

Well, when we have the right sort of modeling compound and know how to use it, *that* once vexing problem is easily solved. *Then* the old bugaboo vanishes. Then it is very much easier to take such an impression in compound than in plaster; that is, plaster in the old way. The best *old* way, however, is new to a majority of dentists.

The common old plaster way is to take the impression, teeth and all; remove the tray and break the plaster adhering to the teeth all into uncertain pieces, in the mouth; then take pieces out and stick them back together—and make the model.

That is hard on the patient; besides, all the trimming of the plate afterward is by guess-work.

Even if using all plaster, I have a decided improvement on this old pull-and-push way. I make the plaster break easily and just about where I want it to. I simply place layers of thin tin-foil where I want the plaster to break. I drop the little foil flakes in while I 'm filling the tray. The foil will make a seam in the plaster just about where I want it to break apart. Then a little thin cement, such as we use in temporary fillings, will unite the pieces of our purposely-broken impression to perfection. The Detroit Dental Mfg. Co. make a plaster-cement purposely for mending broken plaster.

But I can take the impression of these leaning teeth and bell-shaped crowns just as well

with modeling compound, and then have the benefit of my accurate muscle-trimming, which is impossible with plaster by the old way. *But, now, how to do this.*

CORING OUT FOR UNDER-CUT IMPRESSIONS.

I first carefully press enough compound around the teeth to build them out to cone-shape, instead of under-cuts. Then I cool it after in place; varnish it to hold tin-foil; stick on some foil and dust it over with powdered soap-stone.

I then treat these cored-out teeth just as if they were *naturally* cone-shaped. I go on and take my impression over the cores to the finish, same as in our simple case, just described.

When my main impression is m u s c l e - trimmed and conformed on lingual side, and out of the mouth, and so forth, I cool my cores, still in place around the teeth, *well;* break them away from their places; take them out and put them where they belong in the main impression.

Then I make my model, preferably using my non-chargeable approximate, to provide against changes in plaster and in my dentures from packing, vulcanizing, and cooling.

"But," you ask, "how are you going to get your plate into place, when made?" Well, doctors, *that 's your* job—not mine.

I 've shown you how to take your impression simply, accurately, and with a minimum annoyance to your patient. If you have a case of under-reach where the plate *can't be entered* as a farmer enters his slide-bars in his gate-way, one end at a time, you 'll have to cut away some, of course. But be careful *where*

you cut, and cut away no more than necessary. That 's all you *can* do, that I know of. Doctors just set your brain machinery to harmonize with your sub-conscious genius, and answer your own question, and be glad.

But, after all, doctors, a perfectly fitting denture, rightly adjusted to the muscles, doesn't *need* to fit close against the teeth at all points, if, indeed, at any point. If strained, such teeth soon give way for relief, anyhow. So we don't depend on a fit against the teeth to help hold the plate very long. Such help is beneficial only in helping hold the plate in place till it adjusts, or *imbeds,* itself.

As for clasping the plate to the natural teeth, I quit that thirty years ago as unnecessary, when not really harmful. Still I concede there *are* partial cases, where the alveolar ridge has no up-turn at the rear, where the telescope-crown scheme is useful; that is, where we put on a permanent crown on a natural tooth and then attach a telescope crown, or band, to the plate and slip this latter crown, or ring, over the first one. But to cut down any sound tooth to crown it for any purpose should be a last resort.

Also a little extra weight is frequently a good thing—mainly to help hold it down to place while it imbeds itself in soft tissues. But *that* will come up and be explained in our third lecture. I am now on lower impression.

If you care to take a *plaster* partial (which is seldom any advantage where the modeling compound is taken properly), you can take *it* on the compound one, by means similar to the "pass-word method" in our first lecture. (Pages 70-72.)

But, as there is no way to *confine* much of the cream-like plaster, the main point in the "pass-word" scheme is wanting; so the "equalizing" (the only possible purpose of the plaster) will not probably be much improved.

But, *should* you equalize with "cream-like plaster in ready flowing condition," rub the overflow, if any, off of the edges before making the model. The compound has been muscle-trimmed, and is adjusted to the movement of the tissues.

OLD-TIME IMPROVEMENT IN ALL-PLASTER LOWER IMPRESSIONS.

And should you, for old-habit's sake, wish to take a full lower all-plaster impression, let me suggest *how to do it.* But you needn't bother about telling those happy old "plaster fiends," who are sure *they* "already know" enough. I know their self-satisfaction *well,* for I sat beside them in the old stage-coach for years, refusing to be unsettled myself.

Maybe better let 'em enjoy the pleasure of the gambler's chance of hope-and-doubt that always goes with guess-trimming and guess-scraping for relief.

But, for your more modern selves, use our *old-time improvement* on the old, tissue-straining way. That is, we "transmogrify" our metal tray and fit it to the mouth, as I have shown you, to a size no larger than the plate is to be. You, of course, understand the *why* of a shallow tray.

We 'll now punch some holes through it to clinch and hold the plaster. We 'll trace a table-spoonful of soft plaster along on the limited tray and take impression by tremble-pressing down very lightly with our two index fingers.

We 'll look over into our smooth earthen bowl, and, when the remnant of plaster therein has *just begun* to set a *very little* we 'll tell our patient to close her mouth, bite on our fingers *very lightly,* swallow, suck her lips, and work her cheeks mildly—and do it all *quickly* and stop.

When she has done as told, I hold down the impression steadily (or, better, have patient hold it down with index fingers) till the plaster is hard in the cup.

When I take it out, I 'll find the plaster cracked around the edges of my tray, and *lifted up* behind the back ends of its wings. We 'll trim off *to the crack,* and we'll have the most complete all-plaster impression possible.

The moving tissues cracked the surplus material at the edge of my narrow tray when she swallowed and sucked her lips and thus told me about where to trim it to for relief.

We can even *approximately* test this improved all-plaster impression, provided we have no long, heavy handle to tray to tip it over. To make the test, we 'll do just as we did a while ago in our modeling-compound impression, in Step No. 9, of the full lower case (p.111).

Of course, it will not stay down as our modeling-compound impression did, because of its imperfect, file-guess trimming. But it *will* tell us just about how a plate from it would stay down, at the start, anyhow. Of course, it would stay down better after worn a while for adjustment.

To some of our old plaster friends, this improvement would be worth only 98 cents because it would disturb their pleasures in trimming by the old college-gag instructions: "Trim till you *think* you 've spoiled it, and then more

till you are *sure* you 've spoiled it—and then some."

And worse still, doctors, it would steal from them *some* of the sweets of the guess=gambling uncertainty in plate=work.

Yea, doctors, yea, even this *improvement* would rob some of the "best men" of their names at the head of journal articles advising "Only plaster for impressions"; because it would timely lead them entirely away from plaster at all—in lower *impressions.*

Better let 'em go on with their long, deep, and long=handled trays, and their five=pound thumb=pressure that distorts the mouth all out of shape, so they can trim and trim, time after time, with gambling=feature ecstasy. Then in the end, to dismiss the case with multi=assurance to patients that "lower plates don't *stay down,* nohow."

But as for yourselves, doctors, practice these things, first a little in your own "oral cavities," then in the mouths of your forbearing mothers=in=law, "sisters, cousins, and aunts"; and announce to nauseated humanity that *you* use a minimum of *plaster* in mouths when any at all.

Or, to be "ethical," get your patients to tell it around as a *secret* that *you* no longer need a half=gill of mushy plaster in a 3x3 tray to choke=gag people, by forcing it down their throats, like cramming geese to fatten them.

Doctors, please pardon this outburst of impatience with these over=sized trays; over=bulk of material; and over=strain and needlessly disgusting patients, in taking impression. It 's worse than mal=practice; for mal=practice *may* have the apology of selfish motive.

Fig. 13.

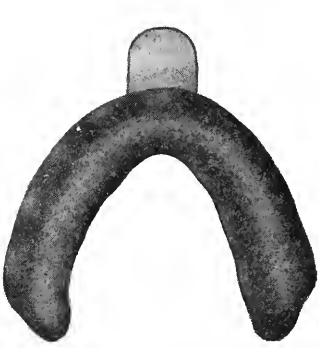


Fig. 14.

Fig. 15.

FIG. 13.—Modeling-compound impression as usually taken in common deep tray. Plate from it would have to be guess-trimmed to fit straining tissues—difficult if even possible.

FIG. 14.—Same tray cut down and fitted to the mouth. Modeling-compound impression (same mouth) just as taken by the Greene muscle-trimming method. No trimming of plate after made.

FIG. 15.—"Correctable" (approximate) modeling-compound impression, taken from model, ready for re-taking and adjustment to the mouth. (Student's method.)

[Cuts represent three-fourths of full-sized impression.]

TO REFIT A VULVANITE LOWER PLATE, TEMPORARILY.

You should keep on hand a supply of thin wafer sheets and various thicknesses of this "Perfection" material. To prepare it, you press it out on a smooth, wet surface, preferably of glass or marble. Warm it in a common tin pan and firmly slide-press it out with a smooth bottle or tumbler, also wet. But it is now furnished by the Detroit Dental Manufacturing Company, of Detroit, Mich., ready for use—called wafers.

A patient comes to your office, maybe when you are busy at your chair, and insists that her teeth be "tightened, somehow." You say to your patient in the chair: "Keep your seat and read this little article in the paper, three or four minutes, while I refit the old lady's plate."

Seat the complainant in your impression-chair. (Maybe blindfold her, too, lest she may learn too much about refitting plates herself!) Wash her plate clean with a stiff brush and dry it thoroughly. (This may be the biggest section of the job.) Heat a thin wafer sheet and stick it on till it perfectly *adheres* to her plate. It must actually *adhere,* and not merely stick. And it must cover the entire surface of the plate, too.

Then add another thickness onto the first. You can't well stick a single thick piece tightly enough. When the second piece adheres to the first *all over,* dip the plate into hot water a few seconds, and have her bite down into it quickly. That is, to take her own impression.

It may require a second heating and bite-down, when the plate is refitted—probably to fit as well as it ever did, possibly better.

"Call again, Madam, if it loses its fit in a few days or weeks. I 'll then have more time and will refit it permanently."

This is a temporary refit, the like of which I 've known to continue for several months. But don't neglect to caution her not to wash her plate in hot water.

She maybe returns in a few days or weeks and wants the plate refitted again. This *may* require only re-dipping and biting again as before; but you *may* have to dry and add another wafer, as before. Your judgment will guide you in it.

TO REFIT A VULCANITE LOWER PLATE PERMANENTLY.

To do this, you file the rim of the old plate, including its heels, off down to where there is no under-cut left. Place a wafer of compound in it, and add fully enough to restore the missing rim and heels. The material for restoring the filed-off rim may be traced-on, as heretofore shown.

Now dip the whole thing into hot water, *for an instant only,* and have her take her own impression by biting *lightly* into the old plate. As this is to be a permanent refit, better soften and bite twice to make sure of a correct impression. The second time you 'll re-heat by hot stream from your spout-cup.

Now you have your impression in the *old plate.* Go on and very-edge the outer rim, and then the inner rim; and then *conform* the lingual rim; and then take the impression of the frænum with essential quickness. In short, do it all just the same as I 've shown you in case of a regular lower impression, only she takes her own impression by biting down.

In case you need to lengthen the lower teeth (*i. e.,* open the bite), you simply use a thicker sheet of compound. And, while it is warm, have patient bite down, slowly and lightly, till the teeth show, or the features show, just as you want them to.

Of course, if the teeth need changing in their position, *that* must be done first of all. (See "Refitting Upper Plate" Page 79).

You have now tested your fit and in all respects have fashioned your denture to suit you. Flask your case, teeth-points downward. But (to repeat) don't put rotten plaster under it to raise it up in the flask. If it needs raising, use some non-changeable substance, like metal, crockery, or glass, to avoid mashing, which might change your articulation. Of course you 'll use the Greene Occlusion Retainer over the ends of the teeth before investing. *Don't neglect it.*

Trim off and varnish your plaster investment, or bedding, as usual.

Fit the metal edges of your flask together, so there will be no tipping nor rocking. This is to avoid change in articulation, or occlusion.

Now fill your "double" flask; the *impression* first, and carefully, to avoid air-bubbles; seeing there 's no water in the impression, too.

If you use a Greene non-changeable model, insert it in the impression according to direction for their use, before filling the full flask.

When the plaster in the flask is hard, warm the case *slightly* over dry heat, and open—at the heels, of course, first.

If you have properly soaped-stoned or polished the impression and it was dry when you poured the model, the latter will come out whole and smooth. But, *should* it break, just mend it

with any tooth-filling cement and go ahead, as soon as the cement is hard.

Never, I say again and again, vulcanize against plaster. But cover your model with tin-foil, or other metal, or with liquid silex, diluted with water, about half-and-half; then smooth it with soapstone powder, well rubbed on.

If you have provided small vents for the escape of a possible little bit of surplus vulcanite, your model-holding half of the flask (at your right) is ready for use.

Now turn to the plate-holding half in front of you; warm it slightly and remove from the old plate everything and all that constituted the impression. Then scrape for a new, clean exposure, *all over the plate's surface.* Note the direction, *"all over."* No need of dove-tails."

Pack evenly; flask with little strain; vulcanize properly; cool slowly and thoroughly; then take out your almost finished work.

There are other ways of refitting plates, but none that embrace the Greene muscle-trimming, valve-edge-fitting, and the like. They all have their defects and their objections.

The impression-paste methods, the latest fads, are quick, but faulty and very incomplete withal. They are *faulty,* in that they don't take *equalized* impression strains even as far as they reach. They are *incomplete* in that they don't extend the plate nor lessen it at any point, and thus don't really refit, where lies nine-tenths of the lacking. Nor in lower cases do they even enable the widening of the bite and lengthening of the teeth, so often needed after alveolar absorption.

Their only advantage is a little saving of time, provided we wanted to cover only their limited application, with incomplete results.

Their application is limited to only kind o' refitting the main contact surfaces of vulcanite plate. Why not refit it all, and, if necessary, extend its area while at it?

I say this with regret, for I 'd slop clear over with congratulations at the feet of the inventor of any vulcanizable preparation that 'd enable the taking of a *complete* test impression in an old plate. But so far that has not been even approximated—nor even attempted, as far as I know.

But, after all, why refit more than temporarily *at all?* It takes but a very few minutes more time, and a few more cents expense, to duplicate anew the plate wholly, than to refit it properly and permanently. And as for the *fee,* you can always get a few more *dollars* for the few minutes extra time and the few cents extra expense, for the all-new material denture.

After you have your contract to refit the old plate and have begun your work to hold your patient, honestly inform her that re-vulcanizing always deteriorates and weakens old plates. And that it would cost her but a little more to use all-new material, which you can warrant not to break. Good rubber properly vulcanized against metal won 't break.

Indeed, if your fee is at all fair to yourself, you can afford, in selfish *interest,* to use all-new material, anyhow. And here 's the way to do it:

RENEWAL OF RUBBER LOWER PLATES FROM OLD ONES.

We proceed in all steps just as we do in permanent refitting, clear up to the time we begin to clean out the old plate for packing in the vulcanite.

Then and there, instead of removing the impression material and scraping out a new surface for the refit-packing, we heat the case hot, over a dry flame—a gasoline stove, for instance. When *hot,* we take a suitable instrument and, beginning at the heel, lift it all out; the old plate, teeth and all, together.

Some of the plaster investment around the teeth will flake loose; but we 'll quickly cement the pieces back into their places, and forget them. Then we 'll oil the teeth and remove them from the old plate, as in the upper case, before described. (Page 78) Then carefully replace them back home. In rare cases, we may need to cement the teeth back into their places in their imbedment, to hold them while packing around them.

Now we 'll cover the model, and all other plaster exposed, with tin-foil (No. 4), thin silex, or collodion, and pack and vulcanize just the same as if we were making an original, new plate. In fact, when done, we have made an entire, new plate, in connection with the old teeth. And we 've done it in far less time, and with far less work, and also much less annoyance to the patient, than to have made it *over* by the usual method.

The right amount of rubber can be practically ascertained in different ways; as by the usual ways of weighing, or measuring in water. But a simpler way is to take the base-plate (or impression material in refit and renewal cases) and roll it out into a sheet the thickness of the vulcanite sheet we are going to use. Then lay the sheet of base-plate (in this case, modeling compound) down onto the vulcanite sheet and scribe it, and cut off to the scratch.

Then cut the vulcanite into suitable pieces and add, say, 4 per cent extra; and go on and pack into place.

But, as guess-work is especially unreliable and objectionable in lower cases, it 's best to use the cloth, as described in our first lecture. (Page 195).

Of course we 'll not tin-foil the model until after the cloth has been used and dispensed with. But during the use of the cloth (which should still retain some of its starch) the *model* should be treated to powdered soapstone, well rubbed on, to prevent adhesion of the vulcanite to it.

The tin-foil on the plate after vulcanizing is readily removed with mercurial paste. (Page 83).

Bear in mind that in thus renewing plates you can correct any fault that existed in the old dentures, either as to fit or occlusion, or both.

Probably you will prefer to take the teeth off of the old plate and replace them (reocclude them) with Setting-Up wax before taking the correcting impression. In that case the teeth, in separating the flask, will remain in their imbedment instead of coming out on the old plate.

In removing teeth from a vulcanite plate I prefer the plan of first oiling them and heating them one at a time with a mouth blow-pipe.

WEIGHT IN LOWER DENTURES.

You have asked about the weight of lower plates, weighted rubber, etc. Well, in some special cases, *limited* weight is a mighty good thing, though hobby-riding and over-doing have brought the practice into less than former use.

If I were taking impressions and using plaster models and making plates generally by the

old ways, I 'd still do as I used to do: weight down a good many of them.

But now, by the new method, it is far less frequently needed; the weight being mostly to hold the plate down till the floating tissues adjust themselves to it. No use to try to weight against *straining muscles.*

While I have other means than weight to use instead thereof, which I 'll give you later on, I 'll now proceed to show you how I weight down a rubber plate to the exact *amount,* and at the exact place, I may want it.

TO SHOT-WEIGHT AN OLD PLATE.

To do this, we 'll go back to our refitted lower plate. When we get *ready* to pack, we 'll stop and take an engine-bur and cut out all but a mere shell of the rear half of each wing of the plate that we are refitting. This is to be filled with the finest "mustard-seed" or "dust" shot.

To prevent the shot from running out, we 'll place across the back end of this excavation a piece of rubber, preferably weighted rubber; then pour in the shot till nearly full. Over this bird-shot we 'll place another piece of weighted rubber; then go on and squeeze together, vulcanize and finish as usual.

When taken out of the flask, we 'll have a refitted and weighted plate, all finished but a little *final* polishing; which we 'll quickly do, while rejoicing over the knowledge of our new, simple, practical weighting scheme.

TO SHOT-WEIGHT A NEW PLATE.

Having thus shot-weighted an old plate, now let 's weight a *new* one, similarly. We're ready to pack our case. We 'll take a little strip of weighted rubber and wrap it around a goose-

quill, or some other small, tapering thing, and knit the rubber edges together, so as to have a weighted-rubber tube, when we slip it off.

We 'll pinch the smaller end and have a tube, the larger end open. We 'll fill it with the smallest of bird-shot and pinch the other end. This gives us a weighted-rubber bag filled with shot; which comes within about ten per cent of solid lead in weight.

In packing we 'll first use the best of vulcanite around the pins of the teeth, or in the holes, if pinless teeth. Then we 'll lay a sheet of weighted-rubber on either side; and then place our bag of shot down *between* the two side blankets; then go on and complete the packing with weighted-rubber, and vulcanize and finish in the usual way.

But use only the best of rubber in front, where the plate needs all strength possible. No weighted rubber there; nor any more pink rubber than actually visible in wearing. Never face with pink rubber any farther down from the teeth than is actually seen; that is, if you wish to be honest with the wearer. Not one lower denture in a dozen indicates pink rubber in front. And use either pink rubber or weighted rubber in center of thick lower plates to prevent porosity.

TO STRENGTHEN LOWER VULCANITE PLATE.

Lower plates, *especially when vulcanized in the usual hurried, careless way,* should not only contain the best of rubber, but should be additionally strengthened in front with appropriate metal. This is on the market and should be used—unless the very best of rubber is used and vulcanized at the lowest temperature and long enough, and left in the flask cooling long

enough to give it the cow-horn texture and strength.

MIXED LOWER PLATES.

It is sometimes an advantage to make a lower plate wholly or partly of *heavy* molded metal: *wholly* when a maximum of both weight *and strength* are needed, with a minimum of bulk; and *partly* when a maximum of weight *with* a minimum of bulk; and *partly,* again, when a maximum of weight *with* a minimum of bulk *at one place* and a minimum of bulk with a maximum of weight *at another* place.

For instance, a few years ago I had a case where the natural teeth were all missing from and including the central incisor back, and all the ridge gone, on one side, but all the teeth remaining and healthy on the other side. The teeth were missing on the left side.

Here I needed bulk on the side where the teeth were to be put in, and a small but *heavy* flange to run around on the lingual side of the natural teeth to balance the artificial teeth on the opposite side.

I had no chance to crown nor to clasp without sacrificing *one* or more healthy teeth, which I didn't want to malpracticingly do.

So I first cast a heavy metal plate to go all around on the alveolar lack-of-ridge on one side and to fit against the lingual side of the natural teeth on the other side of the mouth.

This heavy plate, small in bulk, fitted up fairly close to, but not quite touching, the natural teeth; and also around *behind* the wisdom-tooth, resting there on top of the gums. I used vulcanite (for bulk) *under* my artificial teeth *on* the heavy cast plate.

The cast-metal flange on the opposite side balanced the artificial teeth, and it was a success; though others, and I, had "signally" failed by other methods before.

Yes, weight, under some circumstances, *is* a good thing; indeed, sometimes by the old method of guess-file-trimming, essential for real success.

But fortunately, I 've invented a "Joker" that will, by our methods, nearly always supersede weight.

I am pleased, however, to acknowledge a new invention by "Dr. Gilmore of Indianapolis, Ind.," known as "Gilmore Attachments" for holding plates to place where there are good teeth or sound snags to hitch to. *It is excellent.* (They are on the market by the Detroit Dental Mfg. Co.)

Dr. Gilmore has taken the Greene verbal course and of course takes his impressions and occlusions by the Greene Methods.

SWAGING LOWER PLATES.

I have no improvements to offer to the *best* modern methods of *swaging* lower plates; excepting that in the use of modeling-compound impressions I 'd use the Greene approximate non-changeable model, faced with an equal mixture of the best Portland cement and plaster, well ground together in a mortar before the mixing.

Pouring very low-fusible melted metal into a modeling-compound impression is possible if the impression is *very cold* and the metal at its lowest fusible temperature, but it requires care that *some* dentists won't be guilty of. The agents who sell modern swaging machinery are the experts to teach the art; and it is to their

especial interest that their patrons make a success of the work.

CAST ALUMINUM PLATES.

Cast aluminum plates are becoming quite a fad. Like in all other prosthetic matters, it takes practice to make perfect in this. I have seen enough of it to know it *can* be done perfectly; and yet comparatively few, as yet, have the art perfectly at hand (1910).

Even experts seem to disagree as to whether or not a cast aluminum plate is as impervious to the secretions of the mouth as a rolled and swaged one is. Again, others of equal experience claim the metal itself is not fit for universal use. And that 's my conclusion from what I 've observed of it. Anyhow, it 's generally too light for *lower* plates, where weight is needed.

If cast plates ever become common, then the Greene method of taking *finished test* impressions will be prized the more, because it eliminates all filing of plates after they are made, unless the mouth changes.

It will then be the more appreciated, also, because plates will be cast to accommodate the features, as well as to fit the mouth.

With our plumper-test, the aluminum molder will not have to wax up a guess-plumper and then, maybe, file most or all of it off of his plate in red-hot stove-pipe verbosity.

REFITTING LOWER CAST METAL PLATES WITH VULVANITE.

Lower cast metal plates can be either refitted, or wholly renewed, with vulcanite. When refitted, the procedure is the same as we have just gone through in refitting rubber plates, only

the old metal plate must be scarified and prepared to hold the vulcanite lining *mechanically*. Of course you are all familiar with that matter.

SUBSTITUTION OF WATT'S METAL PLATES IN PLACE OF VULCANITE ONES.

To replace a Watt's metal lower plate instead of a vulcanite one, we take a modeling-compound impression in the old vulcanite plate, according to instruction for refitting; and *test* it to know for certain the plate, when done, will both fit and occlude properly.

But, if you prefer a plaster impression, take it by the "pass-word method," so you can actually test it. (Page 72).

When your impression stands the test and the teeth occlude as they should, then invest your case just as we did in the vulcanite refit case; *only* use a Watt's metal flask and some suitable investment material, instead of plaster. An equal mixture of plaster and powdered pumice-stone is good enough, especially if ground together dry in a mortar before mixing.

Open the flask so as not to break the model, which, of course, is of the investment material and not very strong. When open, heat the plate-holding half of the flask hot and remove the whole thing—teeth, plate, and all. Then remove the teeth from the rubber plate and *cement them* back into their places in the investment.

Close your flask, blow in, and test for clear vents, dry thoroughly, cover flask-joint with silex and investment stuff, heat flask hot, tap and pour metal in slowly.

This is a very simple thing to do, after you know how to take a test impression in an old

denture. And, when it 's done, you 've substituted a new cast-metal plate instead of the old vulcanite one, in less than two hours from start to completion.

Of course you understand this includes both a re-adjustment of the teeth and correction of occlusion, if needed.

TO REFIT AND RENEW A CAST PLATE WITH THE SAME MATERIAL.

This process is just the same as any other refit up to the time of flasking. You now understand *that*.

Now use any flask made for casting lower plates of heavy metal, and flask as usual in that sort of work; using, of course, some proper investment material in flasking, instead of plaster—something that won't crack and change by heat. The pumice-stone-plaster mixture will do.

Open and remove everything clean that constitutes your impression; close the flask, after coating the investment (not the teeth) with liquid silex; then blow in to clear your vents. Then silex the crack between the two halves of the flask to prevent the escape of the melted plate-material.

Then dry well and heat it hot enough to melt the old plate inside; and, while thus hot, pour in the molten metal needed to make up for the space occupied by the impression.

Cool it and take it out, and you 'll have both a refit and a new metal plate, out and out.

TO SUBSTITUTE VULCANITE PLATE INSTEAD OF MOULDED METAL ONE.

Invest metal denture in vulcanite flask, using a half-and-half mixture of plaster and pumice

stone for investment. Dry out the case thoroughly and heat it till the metal plate melts and pour it out. This will leave the teeth sticking fast in the investment. Then pack vulcanite in place of the metal and vulcanize and finish as usual.

TO REFIT LIGHT FLOATING RUBBER OR CELLULOID PLATES BY SUBSTITUTION.

Invest the vulcanite plate in Watt's or Wood's metal flask. Heat it and take out the vulcanite plate, and the teeth off of it. Return the teeth to their places in their "half-and-half" or similar investment; cementing them there securely, if necessary. Dry the case and pour in the melted metal. Cool, take out and finish.

Have patient wear this heavy plate till it imbeds itself in the soft tissues, as your foot would in mud.

Then take this heavy plate, flask it in a vulcanite flask and melt out the metal, and pack in rubber, and vulcanize and finish it. It will fit down into the place made by the heavy metal plate.

LECTURE NUMBER THREE.

ARTICULATION, OCCLUSION, BITE,

AND ALL THEY INCLUDE, FROM A PRACTICAL STANDPOINT.

Well, doctors, in our "Third Degree" lesson we 're "up against" some of the most ticklish matters that come within the whole range of our practice.

FIRST: the bite; and then all that follows till we finally dismiss our patient. In the word *finally,* I hope you fully catch my meaning. It sometimes means away off, and always an hour of rejoicing.

In dealing with the subject of "articulation," as the word is broadly used, I shall try not to go into any mystical wording nor theoretical discussion. I 'll take for granted you 've already had satisfaction and, probably, a surfeit of all that—and often to the exclusion of really *practical* information on the theme.

You 've had actual measurements of dead men's jaws, and approximate and "average" theoretical measurements of living men's jaws.

You 've had maxillary gymnastics and contortive movements on remote, if not imaginary, "planes" and hypothetical curves offered, and sometimes *given* you, till you maybe feel somewhat as the old farmer, Moses Gouge, recently did at a toney town "kay-fay." (This story is vouched for by a reliable dentist, who insists on my using it as a happy illustration in this lecture.)

Waiter (politely): "Beef steak, pork steak, chicken giblets, Belgian hare, quail-on-toast, baked fish, fried chicken, codfish-balls, turkey-breast, mutton-leg, ham, mackerel, or country-made sausage?"

Plain Old Commoner (impatiently): *"Oh, you make me tired!* Jist go 'n' git me the common, home-made sassage that I can kind o' chaw with this gol-blasted, jimble-tumble set o' teeth! They don't strike togetheh, so I can't eat nothin' much, neithah hahd nah saft."

A new, enthusisatic disciple of "anatomical occlusion," across the table, butted in and gave the old Hay-seed a regulation dissertation on articulation of artificial teeth, in "meter" terms, on "occlusal planes," "condyle paths," and "face-bow" measurements, till he got tired again:

"Young man, young *man,* if my teeth lacked o' cummin' togetheh right when I chawed by *your* way o' fixing' 'em, accordin' as they do by the tutheh tooth dentist's larnt gibberish, I guess I couldn't hold 'em in, even when I steadied 'em with a big chaw o' saft terbacker on both sides. If I could only jist git a set that 'd come togetheh *right* even *one* way, I 'd be glad to hold 'em *that* way, and let the tutheh fellehs have thairn to move in them uncommon ways, which you tell me mine had ort teh move an' come togetheh in.

"In fact, strangeh, to be honest: while I wouldn't dispute yoh high college lahnin', I can't jist see *how* yo' 're gwoine teh make a set o' teeth that 'd awlis come togetheh right and even all 'round, when a felleh bit in different ways. I know that even my old terbackeh-wohn-off ones didn't do *that.*

"You might do it in yoh' 'unknown tongue,' but, as the felleh says, 'I 'm from Missouray.'

"I reckon, of kose, if the old Masteh had tuken sich a notion in His head, *He could* o' made all teeth hit togetheh all 'round, no matteh what direction nor *what* we bit on 'em. But one thing is shoh: He didn't make *mine,* noh none of my five wives', noh seventeen chillern's do it.

"Well, I may say, *'ceptin' in one case;* that o' my fo'th wife, Suz-an Moriah. An' she it was who made hern that-a-way heh own self. She was allez stickin' her chin out an' grittin' her bulldog teeth at me an' my chillern by my tutheh women. She woh' her front teeth off so low an' even that *she could* bite on 'em any ways, I guess.

"But, now, I wouldn't want my neighbohs to think *I* had my shop-made teeth patterned afteh Moriah's, nohow."

Well, doctors, we'll first set up a double set of teeth that will come together exactly right "one way," the most natural way. Then we 'll set them to strike like Suz-an Moriah's, "any ways"; at least, any *practical* way.

And we 'll do it without any circumlocutionary verbal mystification, or "unknown tongue," to describe it; or even complicated, ponderous articulating machinery, that requires an anatomical engineer to run it. We'll try to make it all so simple that even a wayfaring (etc.) dentist can understand.

My purpose is to show you how to take a *test* articulation (so-called "bite") and prove its correctness in advance, the same as we tested our impressions; and how to set up teeth in even the common, old plain line articulator, and get all the movements the jaw makes in *practical* use—and even more, too, if you want

them. Yes, and as for that, accomplish the same results, even without *any* articulator at all, other than the mouth itself, as for *that.*

One of the best plate-workers I have ever known, working by the old guess-work methods, has made artificial dentures for fifty-eight years, and has never had an articulator in his office.

And though I have used articulators myself for fifty-three years, I will here say that if I had no advance test methods in getting the *true relations of the jaws* (the "bite"), but had to guess-off everything, as I used to do, and as most other dentists still do, I would *now* throw my artificial articulators, "anatomicals" and all, onto the junk-pile. For, without this true relation, the best of them are not only faulty, but may be absolutely misleading.

But, with the *certainty* of the true relation of the jaws when at *rest,* and a close *approximation* to their movement in action (the "average"), and with an articulator to help manifest these relations, we get a very close approximation to a correct articulation and occlusion.

There is no trouble in getting the exact, true relation of the jaws at *rest* in any individual case. But as to their relation when in motion we must be content, at the first, to get even a close approximation.

We have been given the true measurements of dead men's jaws and ingenious face - bow measurements of living men's jaws, "occlusion planes," and "condyle paths," and the like, even unto hypertechnics. And thanks, honor, and glory to the men who have given them. Their teaching is often helpful, at least instructive.

But, unfortunately, when most needed, the starting points can't be located with certainty

(excepting by the imagination of enthusiasts) and the measurement is only approximate, after all. Not all jaws move alike, nor does the same jaw move always on both sides alike, nor does the same jaw at all times move the same.

So we sometimes have to work to greatly varying bone anatomy, of impossible actual measurement, and to irregular muscular movements, that just can't be relied on at all, excepting as a plausible theory.

But nevertheless we can deal with each individual case on its own merits; and get *practical* results, no matter about the size or shape or angle of the jaw-bone. As a whole, shortly told, we 'll do as we did in our impression. We 'll get first an approximation and then correct up to exactness in these matters of articulation and occlusion.

So now, as to the not only varying, but even changing muscle movements that we must deal with.

In articulation we sometimes can't depend on adjusting our *work* to the movements of the muscles that operate the jaw. We rather must depend on adjusting the *movements* to our work

I am aware how absurd it may seem to some, at first, to propose to adjust the jaw movement to a set of teeth; and yet, if it were not possible and expedient, the most grateful science of orthodontia would be fatally crippled.

The orthodontist must sometimes adjust the maxillary connections and accommodate their action to the position he has given the natural teeth. He couldn't have gotten his grateful results without having trained the movements of the muscles (that moved the jaw) to his work; that is, to his changed position of the natural teeth.

NOW FOR THE "BITE."

The too common idea of a bite is: the natural, *horizontal* relation of the alveolár ridges of the upper and lower jaws. It is, however, correct as far as it goes; but it doesn't go far enough. To this limited idea should be added: *when they are at proper distance apart, perpendicularly.*

Even the horizontal relation of the jaws often changes as the distance apart varies.

Then, a practical definition of a so-called "bite" would be: *The natural, horizontal relation of the jaws when at their proper distance apart.* The *distance apart* meaning the length of the teeth to be, *plus* the combined thickness of the bite-plates used.

But strange how many dentists, including some of the brightest among them, fail to consider the distance apart of the jaws in taking a bite. Indeed, I 've found more than a few who contended even that the distance, or width of the bite, makes no difference; hence they could change it at will after taken.

For example: If you need a starter for thinking on this feature of our theme, just *open your own mouths* and observe how much faster the space increases between your front teeth than between your back ones.

What 's true of your natural teeth would hold just the same with your gums, without your teeth; or with plates of artificial teeth.

No *correct* bite (or horizontal relation of the jaws) at any *given* distance apart would be correct at any *other* distance apart.

Then the first thing, and *the* thing, in taking a bite is to settle on the distance apart you want the jaws; or, in other words, the

combined length of your teeth, including thickness of their plates. And now this must be *exact,* too.

Nor can it be changed after settled=on and in the articulator, *unless your articulator provides for the opening, or closing, at the heel the same as in front.*

Nor is any change of this sort (widening or narrowing of bite) ever necessary, if you will ascertain to a certainty, before you take your bite, how long you want your artificial teeth, including plate, to be. That is, in effect, how much you want your teeth to *show.* We 'll call it their show=length. And this is easily determined and settled with certainty, as you will presently be shown.

ABSURDITY OF A COMMON, MOTIONARY BITE.

In all dental prosthesis, and indeed in all dentistry, and in all the unphilosophical ideas and acceptations therein, there is no greater uncertainty than that of a common, *motionary* (pardon the doubtful but needed new word) bite; no matter in what "way" nor how you may take it.

In fact, when closely scrutinized, it amounts to practically an *absurdity,* even though you do *sometimes* get the correct relation of the jaws by it. In certain kinds of difficult cases, to be mentioned later on, success would have to be almost an accident.

Absurd for this reason: You ask your patient to give you her "natural" bite, when she really has no regular bite to give.

She used to have a regular, or habitual bite when she had her natural teeth. The teeth then held her jaw in a certain position so much

of the time that it, in fact, regulated and established the movement. And that movement then was her "natural" bite.

She *then* had no trouble at all in opening and closing her mouth very nearly the same way every time; the same as when habit regulates the muscles that give the drilled soldier the same "regulation *step*" every time, if there 's nothing to interfere.

You and I who have teeth, either natural or long-worn artificial, have our habitual ("natural") bites. But pull our teeth out and let our jaws hang loose awhile, like a bell-clapper, or clock-pendulum, then our muscles that move our jaws relax or contract or both, and lose their habitual action. Then we have no natural bite to give. We have simply lost our habitual bite.

And *then* to cram a mouth full of unnatural filling and under such circumstances to expect a natural, *same* bite is the acme of presumption, if not an absurdity.

So, we 'd just better take for granted that our patient, having no longer a certain habitual action of her jaw, can't *control* her movement; the *movement,* mind you. That is, she can't bite for us *reliably.*

TIRED RELAXATION THE NATURAL POSITION OF THE JAW.

But, though she has no longer an established, habitual *movement* of her jaw, she always has a natural *rest* position of it. We 'll call it a *tired-rest* position.

For instance (to my clinic-student at my left): Madam, let us illustrate our case. Open your mouth and stick your jaw out at me for a little while. Don't let your gums come *quite*

together; but hold them just that way a few moments.

Now, how long could you hold it in that strained position, with nothing to rest on? "Not long," you say. No, of course not; but what would happen when you couldn't hold it out any longer?

"It would go back," you reply. Back, but where to?

"Back to its natural place, of course," you answer.

That's it! When your jaw is tired, it goes back to its *natural-rest* position. But it doesn't have to be stuck out that way to tire it, at all. We can tire it in a simpler way than *that*. I have used *that* way to impress you with the principle.

We can tire your jaw quite sufficiently in a minute or less by merely holding your gums apart, with your lips *lightly* touching. We 'll apply the principle, in taking a bite, now soon.

WHAT DO WE EXPECT FROM A BITE?

There are four important points that we should secure in a bite.

First: The length, or showing (show-length) of the teeth.

Second: The out-standing, or in-standing, of them.

Third: The come together, or occlusion, of them.

Fourth, but not least: The strain, or pressure, with which they come in contact.

Though the fourth point is unthought of by ninety-five per cent of dentists, it is extremely important; since the whole matter of occlusion may largely depend on it. We will deal at-

tentively with point *four* in its place a little later on.

There are two methods of taking a bite, with variations in both. One is known generally as

THE "BISCUIT," OR "MUSH," OR "SQUASH," BITE.

It consists in placing a roll, or chunk, of wax, or other material, in the mouth and having patient simply "bite" on it. The other is known as

THE RIM BITE.

Base-plates are made of various materials to approximately fit the gums, and rims of wax, or other material, placed on them; then bit-on and marked, and fastened together on their models, in the articulator. These are the two methods, given without detail; and it is supposed that you are familiar with one or the other, or both of them. My only use for them is as a basis for illustration and improvement.

By this biscuit bite, you get no *one* of the four points needed, *exactly;* and seldom very approximately, unless sometimes when it is provided to give the first one (length of teeth), in a way, by use of a "bite-stick."

This is accomplished by placing a piece of wood in the "biscuit" to stop the lower jaw at the proper distance from the upper one, and so give the length of the teeth.

But, as this is seldom done, it is safe to say that generally in the biscuit bite you get nothing you want, excepting a very remote approximation of the relation of the jaws. It is really about all guess-work.

And whatever success is attained to, can be attributed to your experience and good guessing, in setting up the teeth and trying them in the mouth; the unreliability of which will be dealt with later on.

By the way, before we close this demonstration, we 'll give you some important improvements on the old "mush" bite, that you can give your friends who persist in its use. For yourselves, you 'll have no further use for the method, even improved.

This rim = bite method was originally intended to give the first three of the aforementioned points; that is, length, prominence, and occlusion.

But, as the method has been seldom properly taught and practiced; and as faulty materials have been used; and as dentists, discouraged, have adopted and rely on the "try=in=the=mouth" plan; and as the rim bite (as it is commonly used) has to be followed up by cut=and=try guess=work to get even what is attainable by it, I 'll give you.

THE GREENE IMPROVED AND PERFECTED RIM BITE.

This gives all the *four* requisite points without any guess=work. And *this* is the work we are now up to.

BITE FOR A FULL UPPER=AND=LOWER SET.

We have our models, over which we are going to vulcanize, or swage, our plates. If we take *good impressions* of them in "Perfection" Impression Compound material, our impression=bite=plates will fit to the gums about as well as the finished plates made from them will fit later on. And a good=fitting bite=plate, one that

will stay to place, is an *essential* in the bite. Don't lose thought of this.

UPPER MODEL FIRST.

We 'll take our upper model first; lay it down on the table, face upward, soapstone it well, and carefully take a "Perfection" material impression from it.

This impression, taken without a tray, will have a rim of ample thickness and prominence, for trimming down to what we may want. But its palatal arch will be pressed down thin—say, down to an eighth of an inch in thickness—to avoid bulk; and made smooth. It will then constitute our bite-plate, in the rough.

In a few cases, where a model will have a projection, you will, before taking an impression of it, have to core out the "under-cut" with a little compound, and cover this with thin foil, so as to get it off the impression without damage or trouble.

TRIM FOR FULLNESS OF UPPER LIP AND TEETH.

We 'll now put it into our patient's mouth, after a little explanation to her, and say: "Now, Madam, suck that up tightly."

To begin with, it purposely makes her lip a little too prominent. But we trim off until it suits us as to fullness of expression—without regard to the lower jaw, at all. In fact, we hold our hand over the lower lip, during the adjustment of the upper one, to avoid being misguided by the contrast.

The trimming is done similarly to that in side-trimming an impression: first warming the outer surface to a very slight depth over a hand-lamp, and then using a sharp pocket-knife.

It now reprensents the fullness of our coming denture all around.

While I 'm not here to teach you physiognomatic taste, at all, I will suggest that you don 't give your patients a cat-fishy appearance by too square a front and too prominent bicuspids—a very common, distortive habit among dentists. And always beware of tucking the front teeth *inward,* or the bicuspids *outward,* too much; especially for a woman—unless you want to make her husband, or beaux, look at some other face. All dentists guilty of this unpardonable sin against featural symmetry should be de-licensed. And oh, what a lot of vacant chairs there would be!

TRIM BITE-PLATE FOR LENGTH OF UPPER TEETH.

Next we 'll get the "lip-line" for the show-length of our artificial teeth. This you can get in your usual way, whatever that is; only be sure you get it. I prefer to use the laugh-stunt, as a rule.

We look her in the eyes blandly and say: "Madam, please smile or *laugh* a little at me, will you?" She laughs, always promptly, when told to. So we trim till we get the rim to represent the exact *length* we want the teeth to *show;* that is, their show-length as far back as they will show.

Then, not as a matter of taste, but as one of mechanical philosophy, trim off the rest of the rim behind so as curve gradually upward; and make your *last* molar as short as possible (the exception would be where you want to prevent the cheek from falling inward); first, that your *denture* may have the "compensating curve" (incidentally); but for another more

potent reason than the one usually given, to be explained later on.

So now we have our upper rim-bite-plate to represent our teeth when set up. It will be our guide, too, in setting them up.

Next we 'll do the same thing in our lower case. As in the upper, we 'll get, again, our rim-plate impression from our lower model (or from the mouth, as for that). But we must see that it will *stay down*—somewhat, at least—to its place in the mouth. This is *important* and almost essential in getting an ante-test bite. If the mouth has an alveolar ridge, it will suck down; but, if not, we must otherwise provide for its down-stay.

In this flat, flabby case, we must have a substitute for suction in our lower bite-plate.

HEAVY LOWER BITE-PLATES.

Here watch my most valuable little invention ever made in bite-taking. We 'll take the impression of our lower model with *heavily weighted molding compound*—that is, compound with fine bird-shot well kneaded into and through it; and even with small bars and rolls of lead also worked into the rim, if necessary, to hold it down to place.

TRIM LOWER BITE-RIM FOR LENGTH OF LOWER TEETH.

We 're now ready for trimming and fitting our lower bite-plate to the upper one. But we 'll reverse the order and get the show-length for the teeth first. *Don't forget* that in the upper case we *first* got the *fullness* and then the show-length; but in the lower case it is exactly reversed.

And now, doctors, here is the *way* we get the lower bite-rim to the show-length of the

lower teeth; and also get it to fit to the upper rim. For they must fit to each other *perfectly;* their edges occlusively and outer sides evenly, laterally.

With the upper bite-plate left out, we place the lower one in the mouth and mark the lip-line, and trim *to* it in front—say, to about the combined width-space of the incisors. In scrutinizing for the length of the teeth, look at this *trimmed* place only, for *it* is the stop-guide to the rest of the trimming, to be made elsewhere.

When this guide-point is down to the show-length that we want the teeth to be, we soapstone or tin-foil this trimmed spot. Then *insert* the upper plate, with *its* full occluding edge likewise soaped, or foiled, and cool. Then warm the trimmed occluding edge, only, of the lower plate, and have patient to bite down quickly. (This isn't taking the bite, excepting the press-strain feature of it.)

The trimmed *guide-point* is cool and hard and immuned from sticking, while the rest of the rim is soft on top, so it will mash down in forced contact with the hard upper rim. In an instant she has mash-trimmed her *lower* bite-plate to exactly fit her upper one.

Now when we trim off the mashed-down *surplus,* our whole lower bite-plate rim represents the coming lower denture as to its show-length, or, rather, height; but only as to that. *It* "compensating-curves" upward at the heels, too. Well, provided we want such a curve.

THE OUTSTANDING OF THE LOWER TEETH

is our next point to make.

We must now trim the outer side of this lower rim off all around even with the upper

one. And the two rims must be even with each other *when they are in their exactly true natural, lateral relation to each other.* That is to say, when we have the correct so-called "bite."

When we determined the show-length of our teeth, at the laugh-line, or elsewhere, we settled, by critical observation, the perpendicular relation of the two jaws; now we must settle their horizontal relationship. This can be done with *certainty,* only when the lower jaw is at tired relaxation, which is *normal rest.*

And, doctors, whether deserving or not, I will here venture to throw a little boquet at my own old feet. Whether the discovery is original or not, I am sure I have never known it mentioned, in all the forty years of my practice and association with dentists, before I began to teach it in my private Course a few years ago.

I mean the taking of an immotionary, still bite; or *no-bite,* as I will now call it to the end of these demonstrative talks.

But even though the idea were not original, to be the unquestioned introducer of it practically to the profession is sufficient honor.

THE TIRED-REST TEST-BITE, OR "NO-BITE."

We will now take it, then trim the *lower* plate-rim off to evenly match the upper one.

I *could* describe the process more briefly, but less impressively; so I'll use our dummy patient in the demonstration:

"Madam, you now have the two plates in your mouth. They will stay to their places. If necessary we 'll stick them onto the gums with paste or gum-tragacanth. Look me in the face, listen to what I say, get my idea clearly, and *do promptly what I tell you.*

"Close your mouth till your *lips* come together lightly; but let the plates remain just a *little bit* apart, but so *they 'll* almost touch."

The plates are within about an eighth of an inch of each other, and too near to admit of *unintended lateral* motion in closing this last minimum space under the directions.

"There, *there,* you have it right! Watch, listen, hold just that way till I slowly count ten. Then bite down somewhat firmly, and *hold* down, no matter what I may do with your lips. Watch: One, two, three, four, five, six, seven, eight, nine, ten—*snap! Hold firmly.*"

The upper rim sits down on the lower one at *tired = rest position*—provided neither plate moved. And here you see the utmost importance and necessity of well = fitting, bite=plates. If one or the other, or both, had slipped, ever so little, the result would have been equivalent to that of a really wrong bite, to that extent, by side movement of the jaw itself. And how many bad bites of this sort have we all had from bad=fitting and sliding bite=plates? How many hundred have you had?

Are you all impressed? If so, we will return to our patient.

"Hold still, Madam, while I mark the lower plate."

I here take a small instrument with a right-angle turn near its point and scratch all around *on top* of the extending lower rim, against the trimmed upper one. That is to say, my upper rim guides my marker. Then, to rest my patient, I take both plates out and trim the lower one off to the scribe carefully. This brings them both even; *and* even, too, *when the jaws are in their natural relation*—provided I can

"show" it (and I proudly hail from the "Show-me" State).

Well, I have now attained the *third* one of my four essential points in a bite: (1) show-length of the teeth; (2) the come-together; and (3) the *lip and face features.* The teeth will relate just as these bite-rims do.

RE-INSPECT NO-BITE FOR FEATURE TEST.

But, to make sure the face features will suit *me,* and thus help me to "suggest" my patient, I 'll replace the whole thing in the mouth and re-inspect.

After all this, however, you 'll not need to make, on an average, one change in twenty-five. But *should* you see fit to do so, all that you need to do is to re-trim your rims in the same way you did in the first place, but more carefully.

You can place your bite-plates on their models, warm the rims, and push them outward or

Fig. 16.

FIG. 16.—Greene Tired-Rest Test-Bite (no-bite), with molding-compound impressions, as bite-plates—(in this case handleless trays). The models are "poured" when case is articulated, or before if preferred.

inward. You can trace compound (at least, this "Perfection" brand) on, or add it in strips, for more extension; *or* trim it off for reduction. If you trim off don't neglect to scribe again by the "no-bite."

FOURTH POINT, OR PRESSURE FEATURE, IN A BITE.

Next and last comes the fourth point of essentiality in a bite. This is the pressure, or strain, with which it must be taken. (And here I 'll take the risk of justification in another bouquet at my own feet.)

In traveling seventy-five thousand miles, in fourteen years, among dentists, I have found less than a score who had ever thought (out loud, at least) of the importance of the *strain* with which a bite is taken; or even of a set of teeth set up together. And only one of these had attempted to regulate the matter in his work.

I fraternally wish I could recall his name; he was in my first class in Washington, D. C., in January, 1907. He had invented an ingenius little instrument to measure and regulate dental-plate pressure; only he hadn't had time to perfect his appliance to his own satisfaction. His purpose, of course, was to apply it in a bite.

A SIMPLE, PRACTICAL PRESSOMETER.

We have been over and over the importance of taking impressions at about the stress a plate is to be worn—as a rule with few exceptions. And this stress would be at about strong suction strain.

Well, it 's just as important that a bite should be so taken, too. Otherwise, our occlusion wouldn't be as expected, and we 'd have more or less after-grinding to do, or else waiting to do

till the tissues absorbed and adjusted themselves to the plates. Many a bad occlusion is the direct result of improper *pressure* in bite-taking.

It is astonishing how many of us, including scores of our deep "anatomical" thinkers, have so long danced blindly all around this now plainly visible goddess in the popular Occlusion Show.

But we have all heard of the poor, tired prospector who sat down on a boulder of gold, at Cripple Creek, Colo., to unwittingly rest on a fortune, after he 'd worn himself out at digging and searching for it with a microscope, in doubt, away down in the unknown depths of the mountain.

If I hadn't such well-grounded prejudice against commonly slandered names, I 'd call my instrument "Eureka." But I 'll wait till some other fellow "invents" the same thing and let *him* so name it. I 'll christen it: *Pressometer.*

To describe it and show its workings, we 'll go back to our finished no-bite. It *looks* like it is finished, for the plates *seem* to come together all around alike. In fact, in a way they do so. But we don't know yet how much more strain — *excessive* strain — is being made some place, or places, than at others to *make* them do so.

If it takes *too much* strain, the teeth wouldn't come together perfectly at the natural strain at which they will be worn. And of course other difficulties come "in flocks and droves" in consequence of improper occlusion.

HOW TO USE THE GREENE PRESSOMETER IN A STRAIN TEST.

As a test of stress, we 'll use these two narrow, thin strips of celluloid, or its equivalent,

about half an inch wide, one-thirtieth of an inch thick, and four inches long. They are as smooth and slick as a glass mirror. They are beveled at one end, so I can lay one on each side of my lower bite-rim (in the mouth) and have them come jointly together in front, forming a letter V.

They are also rounded off on the outer side at the heels, so as not to be caught by the cheek. And, when laid to place for use on the lower bite-rim, they also project out in front beyond the bite-rims, so I can handle them with thumb and finger. The two together constitute the full *pressometer*.

In a simple case like this, I place the two halves, one on each side, on my lower bite-rim, with the letter V pointing toward me.

"Now, Madam, bite down on these strips."

She bites, and they both are held fast; but *this* proves nothing; for I don't know how unduly hard she is biting down, nor how much some parts of her gums are giving way more than other parts, to make them thus tightly hold.

Then I say: "Hold, Madam, hold! *Bite lightly.*"

She bites lightly, when *one* of my test pieces holds tightly, while the other slips loosely between the bite-plates. This shows there was more strain on the tight side than on the other one, for the slips are of the same thickness.

I now take the lower plate out and file it off (it is here modeling compound) with a coarse vulcanite file, and try it back. *Now* when she bites lightly, they both hold alike and slip alike, loosely, showing the pressure is the same; *pre-*

cisely the same. Then teeth, set up by these equalized bite-rims, will be of a likeness in pressure.

If I hadn't filed off the bite-rim, but had gone on and set up the teeth by it, I would have had to grind *them* off equivalently.

UNEQUAL PRESSURE SOMETIMES NEEDED IN A BITE.

But, now, I wouldn't have you understand me that stress should *always* be the same all over the mouth. That is the *first* conclusion new thinkers are apt to jump to. But in many instances the strain on the tissues should be *unequal* at different places.

For instance, we have a mouth where the gums are soft and yielding on one side, and

Fig. 17.

FIG. 17 Shows testometers in position between impression-bite-plates. The pressure test is made with the "no-bite" in the mouth, of course.

hard and unyielding on the other side. In the absorbing adjustment which always takes place, more or less, under artificial dentures, especially lower ones, after worn, the softer side will change more than the harder; and then finally the teeth would strike together *first* on the harder side.

In this case, the test-slip, in testing the bite, should hold the tighter on the soft side, where the most absorption is to take place. We have pairs of these test-slips of unequal thickness for such cases.

Similarly, if we had a case where the mouth was soft at the rear and hard in front, as is often the case, then our slides should hold tighter back there than on the alveolar ridge, in front; and *vice versa*.

So, you see, the principle holds good both ways. So the simple pressometer not only enables us to get *equal* pressure when we want it, but often, as importantly, to get *unequal* strain when we need *it*.

This rule, however, is not *always* practical, as in temporary cases, where the alveolar process is to become much absorbed. Nor is it applicable when small, soft spots are supported by hard ones near by. Nevertheless its need is so frequent and use so grateful that it might be called golden.

VERIFYING THE NO-BITE.

We have taken our still-bite and secured the points essential to setting the teeth up as we want them; or with close approximation to it. That is, we *guess* we have so taken it. Let us *now* eliminate the guess-factor from it.

To be certain of results, we must *verify* this no-bite before we put it in the articulator; for

it is within the range of possibility that even in our tired-rest short bite one or the other or both of our bite-plates *may* have slipped on the gums. It isn't probable, but possible.

Also it is *possible* that the lower jaw *may* have moved a little bit laterally; which would give us the same bad occlusive results. Let us, then, even mathematicize our proof-test.

We have made *one* no-bite at jaw-tire number ten. That was when we scribed-marked our lower bite-rim, to trim it off even with the upper one.

Now if we can have two or three more of the same time-length, and they all register alike, we can know with about mathematical certainty that we have the natural position and relation of the jaws *at rest.*

MATHEMATICAL TEST OF THE NO-BITE.

To make it, we 'll cut, say, three test V-shaped notches in our *upper* bite-rim; one right in the front-center, and the other two—one on each side—about the place of the first molar. Then give the command:

"Now, Madam, I want you to give me another slow, short-bite, *just the same as you did before.* Close slowly till your lips touch *lightly,* and hold the *plates* as closely together as you can *without* touching. You now know how to act promptly.

"One, two, three, four, five, six, seven, eight, nine, ten—snap! Hold now, as before, till I mark again."

I this time make a perpendicular mark on the lower rim immediately opposite the very center of each of my test-notches.

Then I take the plates out of the mouth and with the Kerr tracing-stick I hot-drop three small test-knuckles onto the lower bite-rim to fit into the test notches above. (Here this little fine art is shown practically; by first dropping a molten wee-bit of the roll tracing-stick onto the occluding edge of the lower rim, right opposite the mark thereon, and pressing it, a little bit, into its mate-notch on the upper rim, thus forming a test-knuckle.)

We make the first pair of notch-and-knuckles centrally in front; then one on either side, one at a time. To prevent sticking together, one or the other of the plate-rims is dipped into cool water the instant before the two are pressed together (outside the mouth.) We then trim off any little side surplus about the knuckles, and re-warm and press back together, to make sure these latter knuckles don't interfere with the exact coming together of the rims *between* them, which might destroy our proper *stress,* established by our pressometer.

This fitting the knuckles into their notches requires care, but is quickly done—yes, in one-half minute of time.

THE THIRD STILL-JAW TEST.

That is *twice* now, we 've tired the jaw at number ten; let us have another tired bite of the same duration; this time to see whether or not the test-knuckles will jibe properly together into their match-notches *in the mouth,* just as they did out of it.

"Again, Madam: *One, two, three, four, five, six, seven, eight, nine, ten—bite!*"

If the knuckles register into their mate-notches properly, as they will if all has been

done carefully, we have thus taken three no-bites at three different times, and all just alike; and no error or doubt about it. We could take more, if necessary, to please a surprised Thomas—and sometimes do so.

Once I had a "Smart Alec" insist that I couldn't convince *him* of the correctness of *any* bite, or "no-bite," no matter what "proof" I might show; as *he* had been "fooled in bites too often."

"Well," said I, "for your sake I 'll admit this to be wrong; not *uncertain,* but *wrong.* Would you be satisfied if I could set up a set of teeth just that wrong, with their cusps and counter-spaces knuckling together like these, in the mouth?"

"Yes, I *then* would be satisfied," said he. So I proceeded to show him by setting up the teeth. And that is what I will now do for you.

TRANSFER NO-BITE TO ARTICULATOR.

We must now transfer the no-bite from the mouth to the articulator, which is to be an approximate representative of the *real* anatomical, bone-and-flesh machine itself.

But now, before I leave the no-bite, I must say, of course, in the remote event that our notches and knuckles should fail to jibe together in the last tired-short-snap-test, it *would* be because one or more of the times the bite-plates (one or the other, or both) did slip; or else because the lower jaw really did move, in some degree, horizontally. It couldn't be otherwise. Then of course I 'd do the notch-and-knuckle work over till I got my no-bite test.

ANATOMICAL MOVEMENT ON THE NO-BITE.

If I have what I call a "cripple" case, I make that individual mouth its own articulator, in a practical sense. By a "cripple" case I mean, for instance:

(a) A prominent "jimble-jaw" of extended mal-protrusion; or,

(b) One of the reverse, retrusion; or,

(c) One where one wing of the maxillary is much longer than the other; or,

(d) One where there is evident erratic movement on the "condyle path," on one or both sides of the face; or,

(e) One where the hide-and-go-seek condyle socket, needed for the face-bow measurement, is so covered with tissue that it can't be located reliably, as a starting-point; or,

(f) One where other mal-formation or mal-action is in obvious evidence.

I say: In such cases I make *each individual mouth naturally its own articulator,* either wholly or in a very close degree; using artificial machinery as a convenient, *approximate* assistant.

A "CRIPPLE" MOUTH ITS OWN ARTICULATOR, IN THE FINIS.

To do this (*i. e.,* to make a *real* automatic articulation), I take my completed no-bite (sometimes un-press-measured) and trim about one-eighth of an inch off the top of the lower bite-rim; say, from the second bicuspid rearward. Then, in the place of this removed material, I fill-on a facing mixture of plaster and pulverized pumice-stone (plaster one to pumice three), with a little extra fullness on top. Fine molding-sand with plaster is good.

This soft-stone, as I will name it, is frail enough to be readily worn off by attrition.

The upper bite-plate stays to its place, and (by my several improvements) likewise the lower one, too. Of course, these stationary conditions are *essential* to the operation.

Now, with the upper bite-rim cold and rigid, I have patient chew-grind the two bite-rims together (the upper one being hard modeling compound) with the natural movement of her jaw, until the soft-stone facing is worn down as much as the hard compound in front of it will permit; that is, to genuine anatomical occlusal representation.

(Some of my enthusiastic anatomical friends may re-invent this little, but exceedingly valuable, Greene-point, and name it *their* "Anatomical Grind-stone Method," if they want to.)

Occasionally this anatomical abrasion of the soft-stone may be so much as to hinder the placing of the no-bite in the articulator with convenience and certainty. In such a case, I stick a thin sheet of tin-foil on the abraded soft-stone, and put a little thin-like plaster on the foil; and then have patient no-bite lightly straight down on the plaster—*this* time without lateral motion. This restores the lower bite-rim and enables correct arrangement in the articulator.

I could use modeling compound instead of plaster for this restoration of my abraded soft-stone, but it might get too hard and give undue pressure, and thus spoil the accurate effect of the occlusal abrasion. Medium soft plaster is about right.

Understand: the only use for the soft plaster restoration is for convenience and safety in transferring the no-bite onto the models in the articulator.

When setting up the teeth (the upper) by the guidance of the lower bite-rim, of course the plaster level-up is first removed, then the teeth occluded to the worn abraded soft-stone.

We 'll carry out the rest of our anatomical, occlusal, guide-bite-abrasion scheme to the ultimate anatomical occlusion of the two sets of teeth a few minutes later on.

So far we 've only been getting ready to use our *artificial* articulator *first;* before applying the newly discovered last act of making *a cripple mouth its own articulator.*

(A class-man asks: "Why isn't this a good way to take any *other* than a "cripple" case bite?" It *is,* but it 's not often necessary where our regular no-bite scheme can be accomplished, but it's never amiss.)

Another question: "Why not use some sort of hard, thin wax base-plate and put modeling compound on it for a bite-rim?" That 's our old way. You can do it if you can get a well-fitting base-plate; essential in any bite method.

As for that, you can do *better* by swaging a metallic bite-plate and using a modeling-compound bite-rim on *it.* You can then, when in the articulator, remove the compound rim and replace it with Setting-Up wax, on which to set up the teeth. Any bite-plate that will *stay to place without assistance.*

But, if you make the "mouth its own articulator," the *bite-rim* must be of material that will stand the *natural,* automatic grind-mashing maneuver; which is done *first* in the bite—later, on the set-up teeth themselves.

CORRECT BITES TILL THEY DO TEST.

If, in any case, our no-bite test *should,* from any cause, *fail,* then the remedy would, of

course, be to do it over; or as much of it as necessary, until we get the absolutely "mathematical" proof we need. But with care from the start you 'll, indeed, seldom fail to make the jibe-test on the first trial.

But right here let me, before I forget it, run back and suggest that in case you shouldn't have time to wait and make models, from which to take bite-plate's impression, you *can* take them directly from the mouth.

That is, you can take one set of impressions for making vulcanizing models later on, by keeping them in cold storage till ready to make the models. And then you can take another set of impressions, and take the no-bites on *them;* and put them likewise in cold water till you get ready to make your models and articulate your case, weeks or months later on.

Or, you can take your no-bite readily without waiting to make models, by using the impressions themselves as bite-rims, with the Greene-Kerr Removable Handle Impression and Bite Trays —as I'll soon show you. See Fig. 16, p. 156.

FIRM ARTICULATOR IMPORTANT.

As to articulators, I will say: There are some good ones and more bad ones. My objection is to those of needless complication and bulk, *and* those that are flimsy and flexible; especially the latter.

I find articulators very much like inlay machines; some are perplexingly ingenious and others ingeniously simple. And the funny thing about it is that the *good* plain and complex ones give about the same result, if properly operated, from a tested no-bite.

Anyhow I can get all the real advantages in a simple, light but *strong,* plain, old-style

articulator, by a little improvement, that I can make in a few minutes.

The only exception is that I can't open or close (widen or contract) my bite after in the articulator. But by my advance-test system I never need nor want to do that.

With it I can make all the movements the jaw makes in actual use. It is the pattern I find in use (*minus* my improvement) in nine-tenths of all the dental offices I visit; hence I use it mostly in my demonstration. But this is not condemning all others, at all.

The *essential* of an articulator is that no part of it can move, nor especially spring, without purpose effort. The old Bonwell is particularly faulty in its flimsiness and consequent liability to change the bite; on account of which so many failures are made that the "springy old thing" has been generally discarded and junk-piled. And yet the faulty *Bonwell* is good enough in the hands of the very few dentists who persistently self-train themselves in exceeding carefulness.

To illustrate this important weak point, I carry with me an old plain-liner with its upper jaw so weak as to be sprung carelessly and thus change the set-up teeth from the accepted bite, and ruin the occlusion. As the *spring,* by carelessness, is usually *toward,* the result is to cause the teeth to strike together first at the heel, when inserted into the mouth.

Well, as this fault applies to so many articulators, I will show you the consequences later on in this lecture.

I will add here, however, that as I am not pecuniarily interested in articulators, and as life is now too short (at seventy-six) to enter

the "anatomical" arena, I have not tried all of them. But among the simple modern ones I have used and seen used, with satisfaction, is the "Kerr," made by the Detroit Dental Manufacturing Company. The untried ones may be as good. All are mere "approximators."

ARTICULATOR IN MOST COMMON USE.

I will here make my demonstration on an improved old-fashioned plain-liner, because of its simplicity, with efficiency, and because of its being most of all in general use among those who take my Course.

In placing first my lower model on the lower jaw of my articulator, I want its alveolar face about on a horizontal plane with the metal jaw under it. You can readily so trim, or thin them down so with the use of calipers. And my ready-made metal models are generally already so trimmed. (They are manufactured by the Detroit Dental Manufacturing Company.)

I *can* use a "face-bow" to get the model's forward distance, and in easy cases do so.

(Here the Snow face-bow and its applications are shown when requested; also the difficulties and uncertainties in exceptional "cripple" cases.)

But, upon the whole, I don't find it really practical any further than to help in getting the "average" of the measurement claimed for the principle. Rather than "argufy" with face-bow enthusiasts, I would save time and admit ignorance in its use. Some claim for it infallibility in all cases. (I 'd rather *smile* than argue.)

I am content to accept the average the anatomists agree on as to the actual measurement of the dead. This average measurement, we

are told, is *about* three and a half inches; that is to say, from the alveolar ridge center in front to the center between the two condyle sockets at the rear. Well, in case of long chinned "Wilsonian" cases call it four inches.

Then the center of the alveolar ridge of our lower model, in front, should be, say, three and a half inches from the cross-bar of our articulator. So, as a substitute for a face-bow, if we have none, we have a simple, little, narrow, thin, flat piece of wood, three and a half to four inches long, with a little scallop in one end to fit against the cross-bar.

TO FIX LOWER MODEL ON ARTICULATOR.

To adjust this model on the articulator readily, I first lay the latter's lower jaw onto a piece of paper on the table; then pour some thin plaster on the paper; then set my model into this soft plaster, and apply my face-bow substitute. That is to say, I set the scalloped end of it against the cross-bar of my articulator, and slide my model to make its alveolar front center even with the other end.

In case of much protrusion or retrusion of lower maxillary, I "make allowances." I might and might not come nearer to anatomical exactness by face-bow measurement. But these are of the family of "cripple" cases, for which we hold in our sleeve a last-resort trick-taking card, after the teeth are set to this very close approximation: *"Every mouth its own articulator in the finis."*

After the lower model has been shoved down on a plane with the jaw of the articulator and fastened, as just shown, we place the lower bite-plate onto it (the model); then the upper bite-

plate onto the lower one, with the aforesaid jibing notches and knuckles as guides; and next the upper model into the upper bite-plate.

Next, turn the upper jaw of the articulator over, forward, over the model, not quite touching it. We want to see daylight between them, to be sure there is no metallic strain on the model to tip it. Then we 'll peep under and set the guide-screw, and lock it firmly; and hold up our hand to the avowed certainty that it *can't work loose.* Then wet the back of the upper model, hold it down into its bite-plate firmly without straining on articulator, and plaster it fast.

Now, doctors, the practical fact is you can't get your bite too far back into the jaws of the old-line articulators. I use no face-bow with *it.*

Far more important than the "brand" of articulator is the essential fact that your bite-plate (which should be preferably of modeling compound) just must stay to place on the ridges and at *normal plate-wearing stress,* when taking your so-called bite.

And that it must also be held absolutely to place *on the models* while you set up the teeth.

And again all this, *especially the proper strain,* when you occlude ("try in") the case in the mouth—"to see."

If these conditions don't *all* obtain, *then* all scientific, fine-spun, high-tension theories about bites, articulation and occlusion *must fall* in practice.

Furthermore the teeth must be held irremovably to place in their investment, in the flask, while vulcanizing and cooling.

Put these Greene statements into your pipe and puff the smoke at all enthusiastic "anatomical" Occlusionists—in my name.

BASE-PLATES.

You are all familiar with the various base-plates used. I presume most of you take your bites in the same plate on which you set up your teeth, and call it a "trial-plate."

Well, if such fits *snugly* so it will firmly hold onto the gums without help, and will not *slide,* that will do. But, if it should move at all, which it is liable to do, especially on flat gums, the result is the same as if a wrong bite had been taken, laterally and protrusively.

Let me repeat and insist that the base-plate onto which you Setting-Up wax your teeth must fit down close to the model *all over* and not come loose. Fasten it to the model with compound round the edges. All this to avoid too thick plate and mal-occlusion.

THE BASE-PLATE.

There are different kinds of base-plates and different ways of using them. Formerly I taught how to make and use a "dip-base-plate."

I formed it onto my model by first wetting the model and then quick-dipping it into melted base-plate wax, twice or three times, until I got it to be the thickness I wanted my teeth-plate to be.

It had the advantage of adhering closely to the model *all over;* and of being the thickness of my coming plate. But there was a disadvantage in taking it off-and-on model—too soft.

But in later years I have found just what I want in the "Perfection" base-plate made by the Detroit Dental Mfg. Co. It is one of the shellac nature; strong, smooth, hard when cool, and just the thickness for an upper vulcanite plate.

After removing my *bite-plate* from the model I fit the Kerr base-plate to it in this way: I first warm the model slightly in a shallow pan of warm water. And while in the water thumb-and-finger-press the also warmed base-plate down onto the warm model until the former approximately fits the latter. Then I lift off the base-plate, stiff enough to handle, and scissor it off closely to the mark-line made by the margin of the model onto which it is pressed.

This gives me the exact extent (height and length) of my coming plate-to-be. Now before cooling I return it back onto the model, in the warm water, and press it to the same until it fits closely *all over*. Then quickly change to cooler water. By holding it in the water to do this the base-plate won't rebound and spring away from the *model* in cooling.

Well, now, to prevent splitting in the roof during my handling I'll fit a small, stiff wire into it across and close to the rear, by heating the wire and pressing it into the base-plate.

In cases of very deep arches I sometimes have to thicken my Perfection base-plate by adding another sheet onto the thin place. To weld this base-plate heat both bodies when dry and press together and smooth down. To polish this Perfection base-plate use alcohol or better chloroform or ether; and rub with French chalk.

SETTING UP TEETH ON BASE-PLATE.

Before we removed the upper bite-plate from its model on the articulator, we sealed or clinched it fast onto the model with cleats of modeling compound, to hold it firmly to its right place thereon. And that right place was made manifest by closely observing the notch-knuckle fit-together of the two bite-rims. A mis-fit would

show the lower bite-plate misplaced on its model; the equivalent of a mal-bite, you see.

Then we fitted our base-plate to the model as just described.

Now we 'll prepare to set the teeth onto our smooth base-plate. We 'll make a little roll, or bar, of Setting-Up wax about the diameter of a very large goose-quill, and warm it and stick it onto the base-plate over and a little to the lingual side of the ridge of the model. We now use the Kerr Setting-Up wax which comes in bars.

Onto this roll of Setting-Up wax we'll hurriedly, but approximately, adjust the teeth; carefully heating the pins in each tooth by the side of our spirit flame, to assure adherence to the wax.

We 'll begin with the central incisors and get them properly located; then work on back, one by one, to the last molar. If a little time is important, this *can* all be done in two or three minutes. Then warming the Setting-Up wax and the teeth thereon, we close the articulator and simply press the approximately arranged teeth down *onto* the lower bite-rim, for length, and out even with its outer edge for prominence. The fixity of the guide-screw holds the jaws to right distance apart; and, if *nothing sprung,* the teeth have taken the *precise position* of the removed upper bite-rim. We saw *that* in the mouth and satisfied ourselves *then* as to its show-length and fullness—we will not doubt it *now.*

To thus finally *adjust* an approximately arranged upper set of teeth requires from two to three minutes.

(The art and manipulation of thus *quickly* setting up teeth by a guide-rim, regulated by a guide-screw, is shown in detail and with special interest in our verbal Course.)

The heavy, cumbersome, complicated articulators are not the best adapted to this work. Nor are the weak, flexible ones *at all.* If you use flimsy ones, re=inforce their weak parts, by brazing on more metal. Don't rely on even your own carefulness in their use without strengthening them. Any springy, flimsy articulator is a treacherous nuisance.

Now your upper teeth are "occluded" down onto your lower bite=rim.

Go on and wax up to suit you; bearing in mind that at the upper edge of your base=plate the fullness is already correct. You took your impression with proper fullness which settled *that.*

Next remove your lower bite=plate off of its model, put on your lower base=plate, same as you did the upper; and the Setting=Up wax on *it* as before.

And then the lower teeth approximately onto the Setting=Up wax as before. And then adjust them to the cooled upper ones as you want them.

And then wax=up the whole lower case as you want it; of course all this time watching your guide=check screw underneath, so as not to change your bite. And as I've before cautioned you: don't spring the jaw of your articulator in occluding your teeth.

After you have set your teeth up thus you can change the position or turn the front ones as you please, even after setting them up to their opposing guide=rim, or opposing teeth.

And, to appear natural they often, if not generally, should be more or less irregularly spaced and stationed. Only beware of any alteration in the *length* of the jaw teeth, after once set up to a Greene no=bite. They are the fixed corner=stones of the *tested* relation of the natural jaws.

But as to the front teeth: you can set or re-set them higher or lower. You can space them apart as far as you wish; lean them outward or inward, or turn them around in the Setting-Up wax.

You can regulate or irregulate them at will, so long as you don't change the guide-screw nor disregard it.

Your full, double case is now waxed up.

TRYING TEETH IN THE MOUTH.

Now if you fear you have missed any thing as to the impression (which is hardly probable if you have carried out these instructions) you can take the waxed-up teeth off of their models in the articulator and "try them in the mouth." They are ready for it, now.

But right here you make a blunder worse than to take the chances of not trying them in, but leaving them on their models. Whether you make any change or not in the mouth be dead sure you get your set-up teeth back onto their models *exactly* as they were before removal.

Whatever you may spring your base-plates, or move a tooth or lack of absolutely correct replacement onto the models just so far will your occlusion be off in your finished dentures. You can readily see that.

But, my dear doctors, even should you steer clear of all displacement of the teeth on the Setting-Up wax, and should you get the plates back onto their models *exactly* as before removal you still have a dangerous gauntlet to run—several of them.

IMPORTANCE OF STRESS.

Think a little, doctors; you took your impression at a given stress on the soft tissues—so

seldom considered by dentists. You made your model and then fitted your base-plate to it at this same strain.

Then you took your bite at more than probably another (likely stronger) strain and set up your teeth at this other strain on the gums.

Then you "tried the teeth in the mouth" and, if at all, probably re-adjusted them onto the gums at still another-stress-pressure. So, even tho' you got your plates back onto the models as they were before there still may be a conflict of two or three different tissue strains to contend with in the case.

Now if you 'll think a moment you 'll see what a conflict of tissue strain may mean. If you want to see what it may mean in occlusion select you a mouth with soft tissues—say an upper case (a soft lower one would be still worse.)

Take your impression lightly with soft plaster. Make your model and make your bite-plate on it. And then take a hard pressure bite: and set your teeth up to this hard bite. Then try your case in the mouth!

It will lack just as much of occluding in the mouth as was the difference between the tissue strains of the impression and the bite. Wherever the tissues gave way most in the straining there will the teeth strike together first when denture is finished.

In such cases it may take a whole lot of after-grinding to even passably occlude the teeth in the mouth, and indeed the difference may be so much, here and there, they can't be ground enough to occlude them.

Now, doctors, after a little side-lecture on prosthetic quackery we'll return to our case right here where we left it. *We 'll show you a way out of all such conflict-of-strain trouble.*

SIDE REMARKS ON PROSTHETIC QUACKERY.

And, my dear doctors, I will here beg pardon for a little side lecture, to insist that by far the most dentists set up their teeth *too* regular to look natural or artistic. The distasteful custom is to use white teeth and set them up for the mouth to imitate buttons on a pasteboard, or tombstones in a national cemetery.

The result is that most wearers of artificial teeth look like ghosts grinning through moonshine.

It is as much of a professional disgrace, or more, for ethical dentists to let their foolish patients force them to do inartistic work and perform unethical operations, as it is for an admitted unethical quack to do the same thing through ignorance or greed. Hard to say, but needs no proof.

Dental ethics! Humph! I have known scores of the so-called "best men" to argue learnedly and truthfully with their patients against the quackery and wrong of sacrificing natural teeth and *then* finally give up and sacrifice them themselves; to do, I might say, their part to teach that their calling is no *profession* after all.

Dental ethics? Almost every week, and frequently oftener, I see mouths of good, or fairly good, natural teeth *cycloned* to make room for little, white, glossy substitutes, to be jammed closely together in straight, even button-rows. Nor do I have to go to an "advertising joint," or "artificial-tooth shop," to see this.

Then, is it any wonder that the really most difficult and highest art in dentistry is sunken to the lowest grade in dental *trade,* when a majority of even college graduates will thus "accommodate" the whims and ignorant prejudices of their so-called patients?

Then, for the dignity of your almost sacred calling, both select and set your teeth in harmony with physiognomy and age; yes, *age* of your patrons. Stand in front of the dignity of your scientific profession; at least, as an ethical *scientific horse shoer* does. You can't hire him to shoe even a mule wrongly; nor scare him with threats to go to his quack competitor.

It is legitimate license to improve features, but you will never do it by such contrasts and inharmony as little, white teeth, evenly set in an old grandma's mouth.

You might as well put a short white skirtlet, white frilled pantelettes and sailor hat on her, and braid her hair with flowing ribbons down behind, to "make her look young."

Now, do you know of any professional modiste who would risk her reputation and disgrace her calling like that? Wouldn't she tell a patron with such taste to *go* to—to some quack for accommodation?

WEIGHTED MODELING COMPOUND BITE-RIM.

In most cases it is practical and I like to set the lower teeth up directly on the lower bite-plate, or rim, of shot-weighted modeling compound, for weighty reasons; one being that I save time in not making a lower base-plate.

I do this by shaving off some of the outside compound and tracing Setting-Up wax in its place, whereon to stick the teeth. Another reason for weighted compound is that weight helps to hold it down to place in all operations connected with it.

In using the weighted compound bite-rim, to set the teeth on, be sure and stiffen it with wire all around the lingual side.

And on waxing and shaping up a lower case, for flasking, always do all and everything on *it,* instead of leaving it to be done on the vulcanized denture. And make sure to scrape out on the lingual side a good and grateful *tongue scallop* —most important point in a lower plate.

And here is the "time and place" to trace-on, with Setting-Up wax, the new Greene "Joker," or tongue-rest, to broaden the lateral lingual reach of your plate-to-be, to give it more area of contact, for suction. Don't extend it more than one-eighth inch, nor make the plate any deeper. And don't put it in front.

Say, doctors, when you get to using weight in lower bite-plates and base-plates, you'll feel, and do, as the tenants of the Duke of Argyle once did.

He advertised for the best way to make them grateful and to praise him, and the result was that he put up back-scratching posts at close convenience all over his estate. Then all the people scratched their backs every day and gratefully rejoiced aloud: "Blessed be the Duke of Argyle!"

Yea, doctors, in severely needful cases you may catch their spirit and put up great sound-boards to re-echo: "Blessed be the cranky old farmer dentist from the 'Show-me' State." If you don't, you'll be ungrateful for this $100 pointer. (A class-man: Give us more about the "joker.") All right, I'll give you more. Well, to make room for this accommodating lingual support, the jaw teeth should be somewhat high, or long; and, that they may be so, the touching ones above must be correspondingly short. The rule, then, is to range the upper molars rather upwards and make the *last* one about as short

as you well can; then, of course, bring up the opposite lower ones to correspond.

The exception would be when the upper jaw teeth need to be long, to hold the cheeks out. But, nevertheless, long molars, especially long last-molars, are detrimental to comfortable wearing of upper dentures, anyhow.

Dr. Geo. A. Wilson, the eminent prosthetic specialist, of Cleveland, Ohio, contends that the up-turn in the range of an upper set of teeth should be confined to the final molar; leaving the rest on a plain, occlusal line. And, strictly speaking, *philosophically* he is probably correct. I can't say always *anatomically* correct, for anatomies vary much in this respect.

STILL MORE ABOUT THE "JOKER."

There are some cases where the lower teeth, for one or more reasons, can't be made long enough to provide ample space for a sufficient cut-away for such frictional tongue support, *our tongue scallop.* In such cases, I come to the rescue with a universal, *ne plus ultra "joker."*

This consists of a narrow, lateral addition to the lingual edge of the lower plate on both sides of the mouth—*not in front.*

By vulcanizing (if a rubber plate) such an extension to the plate, at right angle with its lingual walls, and then scalloping out some from both the wall *and* extension, a sufficient tongue-rest can be made, in almost any case, to hold down a lower denture; even if it had no other means of retention. Of course, the extension should be made and the scraping done in the wax; never much in the vulcanite plate.

However, in swaged or cast metal plates, provision should be made for the joker *first in the*

impression, and *consequently* on the model; a stunt requiring skill, experience and persistence.

ANOTHER REASON FOR THE JOKER.

Another valuable advantage in the joker, other than its providing means for tongue force, is that it adds area to atmospheric contact and thereby helps to give the denture more so=called "suction." But beware of adding *depth* to the plate's edge, which was settled in the impression, in the outstart. (Pages 106-107).

It must extend laterally, and sometimes a little angling upward, to accommodate a roll of soft, moving tissue under the tongue.

When the joker is properly adjusted, it sets, in normal cases, down onto and *into* the sublingual saliva bed, ever present in healthy mouths, giving the plate the action of a duck's web=foot in a mud=puddle. Without it, such a plate might be as a chicken's webless foot easily working up=and=down in water.

The joker should extend in length, say, from about the anterior of the first bicuspid to the posterior of the second molar; and in width, say, one=eighth to three=sixteenths of an inch in the center, rounding off gradually to the ends.

While I advise usually about this width for this tongue=rest extension, I have put them on twice as wide, with little or no discomfort to the wearer.

In one case, a dentist misunderstood me and made the extension half an inch wide. His report, a month later, was that his patient "kicked like a bay steer for ten days"; but after he had "cured" ("tanned") her mouth with white=oak=bark ooze, it got well; and "the plate sucked down like a goose's foot in mire."

THE JOKER A NEW IDEA.

The *idea* of a tongue *scallop* is not wholly new, though the scheme never has been practically introduced to much extent until this private Course of Instruction has been before the dentists in a number of States, mostly in the far West and mid-West; now about fifteen years.

But the idea of a lateral *extension* to the lingual rim of a lower denture, to set onto and *into* the saliva pool under the tongue, for water-seal purposes and thereby cause suction, and to furnish leverage for the tongue for mechanical power, is *original in this Course,* so far as I know.

And I remember that it took years to develop active courage from the inspiration to warrant a trial of the theory. And I remember how a few sore mouths almost frightened me for a while away from this most practical of simple prosthetic improvements.

It is a simple matter to scoop out tongue-rest room in modeling compound or wax; and no difficult one to add the joker in wax in "waxing-up." But care must be taken to do it all philosophically; and especially to finish so as to leave no roughness whatever.

And even at the best the mouth will sometimes require astringent treatment, taking time to "tan" the parts so as to immune them from frictional soreness.

Among the numerous astringent remedies I have used to treat sore mouths and "tan" the membrane to immune it from tenderness, I have found nothing less disagreeable nor more successful than simple oak-bark ooze; that is, tea made from, preferably, white-oak bark,

with a very little essential oil of some sort in it to prevent fermentation.

But, withal, the joker is the card that *wins,* even when all others fail, to hold a lower plate in place sufficiently for practical use. (In five years a thousand men will probably claim its invention.)

But don't get the idea, as some have done, that my joker is an *attachment to* the plate. It is simply an extension, *of the same material.*

THE LATERAL, OR "SHEEP-BITE," MOVEMENT.

Well, here we have a full set of real teeth we've set up by our no-bite rims in this Old Plain-Line Articulator. I use it for its simplicity and popularity.

We first set the upper ones to the lower bite-rim. Then we set the lower ones to the upper ones. They come together, *as a whole,* just exactly as our no-bite rims representing them did, "compensating curve" and all if wanted.

But so far we have only a square, perpendicular strike; at least, without any *known* close-occluding horizontal fit. But, in crush-grinding, the lower jaw, you know, has a little lateral motion; sometimes nicknamed the "sheep-bite," and the "quid-bite."

While this lateral motion is never as extreme in the mouth as is generally shown as a possible movement of patent articulators, it is always there, to some extent, in unimpeded natural masticatory action. And, of course, artificial teeth should be adjusted to accommodate the full natural side-grinding action. The wearer will seldom get the best without, say, an eighth or three-sixteenths of an inch sideways play.

Now, the question is: How best to get this natural, lateral motion in an *artificial* denture?

The claim for numerous articulators on the market is that they impart this and all other natural movements exactly to the artificial denture, including the anatomical relations of the teeth. This is indeed well if and when true.

But granting the competency of the machinery itself, there is a problematic combination of ticklish factors in the way of practical application. So the exact transference "depends."

It depends on (*a*) whether or not the dentist has the exact natural bite—very doubtful by usual methods; and (*b*) whether he has this exact natural bite on the articulators exactly as it was when tested in the mouth; and (*c*) whether he knows the exact movements of that particular jaw; and (*d*) whether he sets his machinery exactly to those (probably varying and erratic) movements.

I don't mention these problematic points to hyper-criticize claimants for perfect anatomical articulation and occlusion, by metal machinery, who so seldom give all these essential facts in their case. I do it to put you on your guard in the use of *any* articulating device.

Whether true or not, I'll here assume they can't (for I can't) always organize all these factors into practical operation for the exactness claimed. We'll then go on and do at least the next best thing, under the circumstances. We'll make the closest *approximation* that artificial machinery can provide, and then make the *jaw itself its own articulator in the finis.*

THE COMMON, OLD PLAIN-LINE ARTICULATOR IMPROVED FOR ANATOMIC WORK.

I have here an old plain-line articulator that I have so improved as to give, I think, as approximately the *average* anatomical movements of the natural jaw as any I've seen.

You'll laugh when you see the plain, humble, slandered old lady in fashionable dress and in service on the modern "anatomical" stage. *Why, she's joined the Lecture Bureau!* My! isn't it a bouquet-deserving achievement to have "discovered" the mud-covered old diamond!

See here, doctors, with this native cross-bar she shows her plain open-and-shut, unassuming position; her straight up-and-down way of doing. That's "before taken."

Now, look again! By a simple twist of my fingers I'll remove her old tight-jacket cross-bar and insert a freer (smaller) base of action; a simple, common 8-penny nail that I found on the sidewalk, trampled in the dust of humiliation by the thoughtless multitude—only an 8-penny nail, rusty from ill-treatment, neglect, and inactivity.

But humble as the common nail is, it enables *Madam Old Plain Liner* to sweep the anatomical horizon to the right and to the left in graceful, competitive waltz.

What an honor to the down-trodden old nail to have enabled the long-guyed old Madam to impart such lateral "sheep--bite" benefit to toothless humanity!

Well, let 's stop praise, and ask the old thing to prove she 's from Missouri by "showing" us. I'll be her humble servant. Watch me. I 'll baptize her upper jaw, teeth and all, "into" cold water. Then I 'll give the *teeth*

of her *lower* jaw a warm reception over our cheerful spirit-lamp till they are ready to move in the right direction.

See! Now I clasp my whole left hand firmly over her cold upper jaw and hold it tightly all around; then fully clasp her more tractable lower jaw, in the same way, with my right hand—that lifted the lost nail from the mire and the clay to glorious usefulness.

With the upper teeth waxed-up, cold and set in solid firmness, and the lower ones warm and willing to yield to their superiors, under pressing circumstances, I 'll give the command to "Side-wiggle!" And all on a sudden the teeth below have "exactly" waltzed themselves toward those above them, to practical anatomical juxtaposition—if we 've watched the set-screw and haven't bent the metal jaw. We now have lateral occlusion, also.

But the action of Madam Plain-Liner isn't up-to-date yet. She must now set her face in another direction. I'll further help her up in the popular anatomical world. Watch me close this time.

THE FORWARD BITE MOVEMENT.

I 'll take a small, parallel-round mouse-tail file, the size of a 6-penny nail, and make a small "condyle path," or slot, running out from each one of the four cross-bar holes, at regulation angle; on both sides of the articulator, of course.

These slots extend out about one-sixteenth of an inch from the main cross-bar holes; those in the upper jaw extending forward and those in the under jaw rearward. The two condyle slots (a pair) together in action give the lower jaw a range-reach of, say, one-eighth of an inch;

or more, if wanted. And as much more *as* you want, according to depth of slot.

So with a still smaller nail, a 6-penny, that will move in the newly provided "condyle path," she can now reach out and bite *end to* on her front teeth—like "Suz-an Moriah" could.

We peep under and see that our "compensating curve," made for other purposes, and incidentally for this occasion, is intact. The rear molars still hit together "automatically." By further extending our little-nail slots, Madam Plain-Liner could make just as exaggerated, protruding movements as any of her competitors. But she doesn't care to distort merely to show off possibilities.

EACH MOUTH ITS OWN ARTICULATOR IN THE FINIS FURTHER ILLUSTRATED.

Well, now, if we want the *exquisite* of *natural* anatomical occlusion, we'll first *finish* the upper set; and then take the lower set (which stays down because of muscle-trimmed non-resistance, weight, tongue power, gum tragacanth-paste and atmospheric pressure) and adjust the teeth, *in the mouth,* to the finished upper ones by "each-mouth-its own-articulator-in-the-*fi n i s*" action-to be shown a few minutes later on.

If we can control the one seldom-thought-of, all-important matter of *strain* in the lateral, sheep-bite action, our anatomical occlusion will be mighty close to *perfection.* And this is what we propose to do.

CLASS REQUESTS DIFFICULT AND "CRIPPLE"-CASE ARTICULATION AGAIN AND FURTHER EXPLAINED.

Well, to review: In cases of pronounced deviation from the normal (as in extreme pro-

trusion or retrusion, where even the "average" is evidently out of the question; where the three-and-a-half-inch measuring-stick wouldn't make good, nor the condyle socket be findable, for face-bow application)—we can resort to our already mentioned process of real, *natural* automatical articulation; that is, to make the mouth itself its own articulator in the end.

We can take our regular non-moving no-bite on a modeling-compound bite-plate; which would give at least a close approximation to the true bite; probably a correct one.

We 'd then soapstone the occluding edges of the rims to prevent adhesion, and warm the *lower* one slightly, so as to mash *to* the upper one, not warmed; or to the upper *teeth,* if any, natural or artificial.

Then we would quickly put the bite-plates into the mouth and have patient actually chew on them in all directions. This would mash the soft lower rim off fairly close to the way the teeth should be set up.

Next we would place the bite, as a whole, in the articulator in a way to see *it* make as nearly as possible the same movements the jaw made in mashing off the lower bite-rim.

Future generations may discover some way to breathe the breath of life into metal jaws; but even then they'll have to also discover some way to graft bite-plates tightly onto them, that their maneuvers may "make good."

In some cases I 'd face my lower bite-rim with soft-stone (plaster one to pumice-stone three) for easier abrasion. (Page 165).

If patient had natural teeth above, we would use a model of them; if artificial ones, either a model of them or the denture itself, in the articulator.

We 'd then set our *upper* teeth to the lower bite-rim, *to its anatomically mashed off or worn-off surface,* carefully. Then set up the lower teeth to the upper ones, as wanted; anatomically, of course. The teeth, set up in this way, must have very close approximation to their needed positions.

We would then wax up our case, not forgetting our tongue-rest arrangements; and cool both plates while yet on the articulator. Then take them off the articulator and warm the lower *teeth* slightly over a hand-spirit-lamp flame, just enough to render them movable under light presure, in their waxed environment.

Then quickly put the plates into the mouth and have patient go through all the chewing movements, actually on the *teeth themselves,* lightly for adjustment. This is the *"finis."*

Barring the stress feature (always containing an element of guess-work without the pressometer), this will give a practical "automatic" articulation; especially if the upper set is finished before the chewing adjustment is made.

It is very particular work to use the pressometer on the waxed-up teeth. For then the reduction for the over-strain must be made by warming them and pressing down on them to exactness, *while warm,* in their wax investment; instead of cutting or filing off the compound, as shown in demonstrating our pressometer.

In taking a bite for an auto-articulation like this (if in absence of the pressometer), it is best to soften the *bite rim* well and bite *lightly,* if over soft tissues, to avoid getting the teeth too long, in the first place.

There are many little varying details, especially in these unusual cases, that you will have to work out and apply yourselves. But

the sum=total of the operation is to make each individual mouth especially in difficult cases to be practically its own articulator. And, to do this you 'll have to take some pains to train your patrons how to do their part; and have due patience with their awkwardness. You have gained the victory when you can do this.

While some of this fine=point work would be superfluous in plain, easy cases, it 's nevertheless mighty handy to resort to "every=mouth=its=own=articulator" in unusual ones.

But for Old Green's sake, now, don't get this mixed up with the common old "try=it=in=the=mouth" uncertainty, where light, guess=trimmed lower bite=plates jump up and around like mice in a training=school, preparing for a pussy=cat invasion. Bite=plates and set=up teeth must *stay in place,* to make good in the *finis.*

When *understood,* there 's little kind=ship between the two last=resorts.

(N. B. —This is all shown in detail, on the articulator, in the verbal Course.)

NEW WAY TO TAKE TEST NO=BITES, IN NO=HANDLE BITE=TRAYS.

It has taken me many years to invent and put into practice what I'm now going to show you. It is a combination impression=and=bite tray, with short, movable handles.

With the handles *on,* I take my impressions in modeling compound, to the finish test, just as shown in my first lecture.

After the test, I cool them thoroughly in the mouth; then remove them therefrom and cool again, and also remove the handles. Then add a modeling=compound bite=rim onto the metal tray, on reverse side from impression.

The test impressions are now also bite-plates. We 'll put the upper one in and out, *as* such, and trim it; *first* as to the fullness we want the lips and cheeks to show, as you 've been shown. And then trim as to the show-length of the teeth, as you 've also been shown.

Then we 'll take the lower case and trim *it;* but this time first as to the *show-length* of the teeth, as you 've been shown. Then, to trim it off even with the upper rim, we 'll take our first tired-rest bite, to *scribe* it for that purpose. Then trim it off to the scratch; and go on and finish it all as a no-bite, same as you have been shown.

Now, we 'll fill our impressions, or bite-plates, whichever we may call them (separately). And when the models are hard, we 'll place the no-bite, guided by the mating notches and knuckles, in the articulator. And from this on we 'll finish the case just as has already been demonstrated, in our first no-bite method.

The advantages in this newest invention are: that we can remove the handles from our trays, to better get the fullness of the lip and cheek, in our test impressions; also that there is no chance for slipping and changes in articulating the bite, nor in transferring it from and to the models. Also bite-plates can not warp in a metal tray, should they get warm.

Then, we save the time of waiting to make models and the taking of impressions of them for bite-plate purposes.

In this bite-tray method we can still use the Greene ready-made metal models, in filling our impressions, the same as before, if we want to. And, for certainty in results, that always pays.

IMPROVEMENT IN "BISCUIT" BITES.

Before we invest our case, from the articulator, I 'll now fulfill my promised improvement in "biscuit" bites, to be used should you want to go back to the old habit for "old habit's" sake.

Take your "mush=bite" in the usual way, but in modeling compound, using your wood guide=stick for (approximate) width of bite.

Nine chances to one, you 've taken it (the impression), or some part of it, at too strong pressure. Now to approximately correct *this* just pour some thin, creamy=like plaster in the *upper part,* shake it mostly out, and take it again, just as before, but lightly; this to relieve excessive strain, if any.

Now add to, or take from, and trim for the feature=test, with lips closed. Then take the lip=line (laugh=line) and mark for the show=length of the teeth, all around, not forgetting the short last molars above—for reasons already explained.

Then with a frame=saw cut the "biscuit" in two at this line; and go on and take the tired=rest bite, or no=bite, with which you are familiar, the best you can, under the unfavorable conditions.

This will by no means give you perfection, but, if the improvements have been added rightly, there will be far less guess=work in your old squash bite and its results.

FLASKING THE CASE.

You are all familiar with the seemingly simple matter of flasking the case; but there are some usually neglected points that I would "holler" in the ears of men and whisper in the ears of lady dentists—for best attention.

First of these is: See that the metal rims of your flask come together without rocking the least bit; and see that it 's no bit of old plaster that prevents their rocking; for, if so, it may disintegrate and come away.

Second: See that your models, if plaster, are trimmed down to not over a quarter of an inch in thickness; and then, to raise them up to needed elevation in the flask, use under them some non-changeable filling of metal or its equivalent. I keep a few flat metal supports, varying in thickness from one-quarter to three-quarters of an inch, and set them with thin plaster on one another, if more than one is needed.

Do this even with metal models where they need elevating. For, though the disintegrating and mashing of plaster under a *metal* model will not affect the *fit* of the plate, it will affect the occlusion. Then we mis-attribute the mal-come-together as a "wrong bite."

And here, doctors, let me impressively suggest that if you can at all spare the time it will always pay, especially in soft mouths, to stop here and vulcanize and finish your upper set; and *then* re-occlude the waxed-up lower case to it, anatomically, *in the mouth* before flasking it.

But to our flasking: Use only good plaster, mix as carefully as in making a model, to avoid disintegration; then wait for perfect hardening.

PACKING AND VULCANIZING.

To open the flask, warm it over a small spirit flame, and only enough to provide against breaking the model. When it is warmed through from the under side till its top is of good flesh temperature, it is about right. Then the wax inside isn't melted fast to the plaster.

Open first at the opposite point from any under-cut in the model; that is, usually, prize first at the heel. When apart, quickly pull out all the wax that will come away. Then dip in cold water a minute, when you can easily and cleanly flip off the thin flakes of sticky-wax, loosely adhering to the teeth and plaster.

It is better to get it out in this cold way than to steam it or boil it out; as no wax then soaks into the plaster, or sticks to the teeth, to interfere with proper vulcanization. Bear in mind that it may be even invisible wax, left on the teeth, that causes softness and difficulty in finishing the pink rubber about their necks.

Use none but the very best vulcanite.

Dentists save money at costly risk of their reputation in using p o o r materials. They "fake," maybe unwittingly, on a mighty small financial scale, in using poor grades of rubber—in fact, poor grades of any other material—in dental work.

Pack carefully; use dry heat; squeeze lightly, and close very slowly. And, no matter how experienced you may be in guessing, you 'd better use the trial cloth, especially in lower cases. Use pink rubber in the center of thick upper rims and weighted rubber in thick lower ones to prevent porosity, excepting in front.

The trial cloth is that which comes between sheets of rubber. Don't wash the starch quite all out. Then keep it wet, lest it may stick to the hot, soft vulcanite.

HOW TO VULCANIZE.

Only a few points here; and still fewer of them new. But you are a rare flock of prosthetic birds if *some* of you don't need to have

some, even of the old ones, re-suggested to you. "He that hath ears, let him hear"—it again.

Then vulcanize at the lowest point possible with your tried and known thermometer and vulcanizer. Not all thermometers register temperature alike. Nor, indeed, do all vulcanizers work alike. I have carefully changed the same thermometer to different vulcanizers and found pronouncedly different results.

Then test your vulcanizer often enough to "know for yourselves, and not for another," just how it works. Then, in practical use, run it at the lowest vulcanizing temperature and long enough to a cow-horn tough-hardness, and not a brittle one.

Then leave it in the flask, but not necessarily in the vulcanizer, for several hours. Yes, for several hours, even *after it has cooled.* Leave it in the flask over night if you can. And don't accept this advice as a whimsical notion of an old - timer without reason. Each package of vulcanite sent out to the dentists at its first introduction contained this advice and warning.

I 'll not attempt to give you the chemical reasons, but the practical fact is that rubber, it seems, doesn't complete its crystallic or other hardening arrangement during the cooling process; and, if taken out of its imbedment too soon, it is liable to warp. Then the consequences (which may come even after worn awhile) are often attributed to "change of the mouth." *Experiments in my own mouth prove this.*

And this is particularly true where scraping and filing are done to the extent of bringing a weaker grain texture to one surface. So let your plates "season" several hours, when you can. Make *quick* plates only in cases of absolutely needful hurry.

I wish I had a Gabriel's horn to toot to the prosthetic dental world not to boil their cases and *soften their plaster models* before squeezing together; and *then* not to use much force, anyhow. Ninety per cent of you need this strong talk.

DISHONESTY IN RUBBER PLATES.

I know mainly three reasons for brittle rubber plates: (*a*) absolute DISHONESTY; (*b*) CARELESSNESS, which is a reckless child of Dishonesty; and (*c*) IGNORANCE, which is a legitimate offspring of Carelessness.

When a vulcanite plate breaks, especially if in the mouth, the dentist ought to be responsible for it. For it is next to impossible to break a properly made plate of really good stuff; and it is a dentist's duty to test his material before promiscuously using and selling it.

It would pay you all, and at the same time be a good "educator of the people," to make and keep several toothless plates to jump up-and-down on, and to throw against the wall, to show your patients *what* you can do; and then *do* it honestly. I insist that a properly made and properly fitted vulcanite plate, of good material, *will not break* in the mouth; nor will it out of the mouth without considerable effort. The "cow-horn" samples sent out by the manufacturers are proof of that.

There are numerous coverings for plaster models, to prevent the usual deterioration of rubber in vulcanizing contact with gypsum. There are some excellent liquid "glosses." After strongly advising those of you who don't use anything, to use *something*, I will state that I still use thin tin-foil, preferably number four.

And even thin gold foil is not too expensive for the benefit, if no tin is at hand. The claim that thin foil, placed evenly all over a model, will change the fit of a plate, *on flesh tissue,* is high-grade *theory,* backed by low-grade *fact.*

The model is at first painted with very thin varnish, and the foil then hurriedly smoothed on with a common shaving-brush. Then the foil is as hurriedly smoothed over with pulverized soapstone on the brush. (We licked the foil on before the days of dangerous microbes.)

If for no other one of several good reasons, I would thus cover my plaster models to bring them out of the flask clean and save time in not otherwise even half-way cleaning them of tightly adhering plaster.

Plaster can be very quickly scrubbed off the foil, and the foil as quickly eaten off the plaster, by a thin, hasty amalgam, made in the hand, of tin-foil, or tobacco-foil, and mercury.

The fact is, a rubber plate should come out of the flask *clean,* fairly smooth, and almost finished. It should need no trimming, other than of small excess extensions; no filing, nor scraping, as to its shaping. And no grinding.

LAST FINISHING CARE IN OCCLUSION.

Ten to twenty minutes will finish our double set of teeth, after out of the flask, if we have modern lathe machinery. We 'll slip them into patient's mouth to see whether or not they come together properly.

Nor will we jump to any hasty conclusion about it; for we have all been fooled in that way. We have quickly concluded occlusions were all right, when a few hours, or days, proved otherwise. And sometimes we have hastily said to ourselves, if not to our patients: "They are

all wrong; you *bit* wrongly, and I 'll have to make them over;" when a little time showed a mistake, in our favor.

Now, to forestall the like of this, we 'll take a regular no-bite on the finished denture to *see* for sure about it. If it *proves,* all is well. If the teeth don't hit rightly, after all these precautions, it is nine-to-one on account of some change after in the flask, during vulcanization.

But it can't be *much* wrong; nothing that can't be corrected. So, if needs be, we 'll correct it. And here is the way we 'll do it.

We 'll trace a little very thin smidgen of plaster on top of the lower teeth and take another no-bite on *it.* When the plaster is hard, we 'll take the teeth out of the mouth, and, using compound or bees-wax instead of plaster, we 'll fasten them in the articulator; the plaster on the teeth being our articulating guide.

In placing them in the articulator, we 'll be just as careful in the use of the face-bow, or measuring-stick, if at all, as we were in articulating the bite in the first place, and for the same explained reasons. We 'll now go to the laboratory, out of patient's sight.)

When these finished dentures are in the articulator, we 'll remove the plaster from between them, bring them together, and look under and *see* what has to be ground off.

A few touches with the carborundum wheel, and the worst is off. Now we 'll follow up with carborundum sand-paper, by sliding it between the teeth until each one will touch its opponent, even to the holding of the thinnest tissue paper, if we so wish.

But in this final grinding we mustn't neglect to give the lateral motion to the articu-

lator, to wear the teeth off to the regulation lateral quid=chewing attrition.

A STILL FINER LAST GRINDING TOUCH.

A still finer last touch may be made with carborundum grit. Stick a strong piano=wire coil=spring firmly onto the extending point of the guide screw of the articulator, of a length to push the teeth to about an inch apart.

Then put a "bump=wheel" on your lathe spindle and hold the articulator so the bumps will strike it on top. The spring will *open* the jaws, and the bump (one or more) on the wheel will *close* them. Thus you 'll have a chewing= machine to—chew too fast, if you don't watch out.

This wheel may be of felt, soft wood, doubled sole-leather, or soft rubber; and should be from four to five inches in diameter. One bump is enough.

All you need to do, to add this last exquisite touch, is to feed a mixture of carborundum grit and glycerine, with a small brush, while you wabble the jaws for the quid = motion—and whistle "Yankee=Doodle=Dixie" ten or fifteen minutes. Some dentist, without reflecting what nerve mixture the average man or woman is made of, has notoriously suggested that this grit = grinding process should be done in the mouth!!! "The Great G. Whiz! Who is he?"

BETTER DEFER FINAL ADJUSTMENT.

But, doctors, it is best in cases of unequal tissues and soft mouths to let artificial dentures be worn a few hours, or in bad cases *days,* for adjustment, before those final touches in occlusion are given. It 's best, really, to let all artificial dentures "settle" well before the final occlusive grinding—if they need grinding.

INSTRUCTIONS TO WEARER OF ARTIFICIAL TEETH.

"Now, Madam, you have a set of teeth that stand the best regulation test. The upper ones stay in your mouth with usual movements of face and deglutitory muscles.

"The lower ones stay in place with these ordinary movements, and you can *hold* them in their extraordinary motion.

"The dentist has done his part faithfully to the finish. Will you do yours the same? If so, all will be well, and you 'll have comfort and benefit that can't be measured by money.

"But it *may* require some auto-suggestive determination, perseverance, and practice to reach the goal.

"*First:* Use your own *favorable* auto-suggestion, and *reject* the adverse suggestions of others. This is the first and generally the worst thing wearers of new teeth have to meet with *and* to overcome.

"Some may tell you your teeth are too short, and others tell you too long. Some may say they fill your mouth out too much, and others say not enough. *Many* will insist that your teeth are too dark, and some few say too white; and so on.

"Without their pre-auto-suggestion, few women, or men, under similar circumstances, wouldn't be disconcerted as to their hats or coats.

"And hardly one woman in one hundred who could not be discomposed, and run in off the street, if strangers were to look at her, and several of her friends should *tell* her that her skirt was ridiculously short; even in face of the truth that it was too long. Indeed, any

discussion about the matter would disconcert her. Of course, *you* are an exception!!

"Now, Madam, your teeth are *right* in size, style, and color to suit your features; your *own* features.

"I have made them to look like your perfect *natural* teeth would look *at your peaceful status of earthly incarnation,* sometimes vulgarly stated as your *age.* Beware especially of what your inartistic friends may say as to their shade.

"If they were lighter in color, the contrast would make you appear ridiculous, and, in fact, the *older.* They give you the appearance of a preserved lady of your sweet sixty. So, *accept no suggestion to the contrary!*

"And, now, for learning the art of chewing on them. This comes much more naturally to some people than to others. But *all* have it to learn; and most of them by progressive degrees.

"You 'll first have to learn to chew on both sides of your mouth at the same time. This is to cause your gums to settle and adjust themselves to both side alike. Otherwise the plates would settle the more unevenly as the usual adjustment took place.

"You will easiest and quickest learn on thin slices of boiled ham or tender dried beef. Put a piece on either side to place and *chew,* and *chew,* and *chew,* and swallow and chew.

"Go on and 'Fletcherize' till meal-time, and then take the plates out of the mouth. But, when the meal is over, go at it again and chew sliced meat or its equivalent as before, *on both sides at once,* until meal-time again; and so forth.

"Keep this up persistently till you can chew a little better *with* the teeth than without them. This will not be many days. Then, when you

feel their need and benefit, leave them *in* during meals. But *then,* at first, use only small bits, if of promiscuous food.

"In a week or ten days, you 'll begin to use them pretty well; and in a month, or less, perfectly.

"Heed this advice, and you 'll have no trouble; ignore it, and your road to success may be longer, if not beset with difficulties, both imaginary and real.

"And now, further, Madam, to forestall all ill suggestion, auto or otherwise, I 'll here and now clinch and settle the matter of mastication. I have here some of the thin slices of ham and beef I 've advised, and will give you a practical start that will be unquestioned and satisfactory. [Here she is made to chew on both sides at a time until she *is* satisfied.]

"Now, Mrs. Jones, you have chewed several minutes without trouble. Next time it will be easier; and the next time still easier; and so on until you 'll forget that your teeth are shop-made, at all.

"Your teeth, at first seemingly naughty and worrying, will in time behave admirably from your persistent, but serene, will-power.

"Your eyes will renew their suasive dancing. Your cheeks and features will regain their fullness and flush of the sweet ago—as much as the Goddess of Duration thinks best for you.

"And even your inartistic friends will adjust themselves to your regenerated looks and feelings of sweetness.

"But, finally, Madam, I beg and implore you *not* to accept this extra fine, artistic set of teeth merely on *financial* account. *In such a case, money is vulgar.* I 've taken all these pains for *your happiness* and my own *glory.*"

NO-BITE OF A PLAIN UPPER CASE.

Being through with a plain full "double" set, we 'll now take up this single, simple, upper, toothless jaw, articulating with a toothful lower one. If, however, a few lower teeth were lacking, the bite would be similar.

We manage a similar case one way, and a good way, in our "advertiser's quick-step." (Page 75). And another in the Greene quick-step. (Page 75). Now we'll have two more ways; the *first* one being my own once "regular" way.

I have it here on this same old-fashioned articulator with anatomical attachments. But the same principles and points will apply on any other articulator.

Take your model, on which you intend to vulcanize your plate, and soapstone it to prevent the impression material from sticking to it. Then take an impression of it, without a tray. Work the impression down thin in the roof, and build it out full enough and down long enough to allow for trimming, both as to the fullness of lips and the show-length of the teeth. It is always easier to trim off than to add to; even by our new way of tracing-on modeling compound from our "blessed" tracing-sticks.

The projecting shoulder on the model will be your guide as to the thickness of the bite-plate's rim at the top. Next trim for the approximate fullness of the outer lip lower down. But exactness here isn't really of much importance, since the upper teeth have to come together within certain relations to the natural lower ones below, anyhow.

Then next comes the show-length of the teeth, where no g u e s s-work is permissible.

Mark the lip-line, harmonizing with the laugh-line, and trim the bite-plate down to it. Cut in front only, and for the width-space of, say, the four incisors; and, if needs be, including cuspids. Then have patient repeat vigorous smiling until you 're sure of the proper show-length of the coming teeth.

If you can't see well, you can paste a strip of white paper onto the bite-rim, down to where you have trimmed it, to show how long the teeth would show; or you *could* even stick some incisors onto the compound, if you wanted to.

Next: *Cool* the trimmed portion in front and *warm* the top of all the rest of it, rearward. Then have her bite onto this softened top until the trimmed, hard front strikes the lower teeth and stops the jaw. If this should require more than once warming, repeat it, of course.

When you have had patient mash off the bite-rim for the show-length of the teeth, and have removed the side-mashed surplus, you are ready to tire her jaw and register its natural position; that is, to take the no-bite, which is some different from the full set, in this:

Instead of testing it by notches and knuckles, as we did in the full case, you 'll do it in this way: Roughen the bite-rim in front, back, say, to the place of the first bicuspid, so that warm compound will stick to it. You 'll have a little roll, or thin slab, of this in hot water ready for use. And now for the non-lateral, perpendicular, minimum short bite. Is it necessary to show that again? (Class: *"Yes;* go on and give it again.")

THE NON-LATERAL, MINIMUM SHORT-BITE, OR "NO-BITE," DESCRIBED AGAIN.

"Now, Madam, suck this bite-plate up tightly; then let your jaws approach very slowly

till your lips touch together *lightly* and the lower teeth *almost* touch the rim.

"There, there, Madam! hold just that way while I count ten; then snap and hold *fast*. One, two, three, four, five, six, seven, eight, nine, ten—*snap and hold!*"

The jaw was at tired-rest, and the remaining space too narrow to admit of unintentional, lateral side-motion.

While she bites down, I take my strip of ready warmed compound and press it firmly against the roughened bite-rim (above) and also against the natural teeth, below.

The rough surface on the bite-rim will hold it till I get done; and the saliva on the lower teeth will prevent its sticking thereto.

I will now take it out of the mouth and, with a small, hot knife-blade, stick this connecting strip, at both of its ends, more tightly to the roughened rim, lest it might come loose. The two together, the strip and the bite-rim, *look* like a single piece into which she has bitten. But the biting was done (at short range, avoiding lateral motion) *before* the connecting strip was pressed on.

Next we 'll warm our knife-blade again and shorten the connecting strip off down almost even with the edge of the bite-rim proper. We 'll leave just enough to show a little of the sockets of the lower teeth, into which these teeth are to enter when we make our no-bite test, later on.

Well, the connecting strip has now been shaved off, and on purpose that we can *see* the ends of the lower teeth enter the shallow sockets; or else *fail* to enter, if the no-bite should be wrong, when we make the test.

So we are now ready to test our no-bite.

THE FULL UPPER NO-BITE TEST.

"Again, Madam, give me a test-bite on this. Close slowly just as before; only *this* time keep your lips *apart* so I can see your teeth enter their little sockets as you close.

"Close slowly, *slowly!* There, now, your teeth almost touch the rim. *Hold* till I count ten: *One, two, three, four, five, six, seven, eight, nine, ten!*"

I looked up under her lip and *saw* the ends of her lower teeth smoothly slide into their shallow sockets on the edge of the upper bite-rim.

"Now, Madam, *that 's correct.* Let me try it *again.*"

We test *again;* and the *fact* that the jaw *was at rest* is confirmed by three or more tire-test witnesses.

If the teeth had missed or failed to go into their sockets smoothly, a few trials would have shown at which *one* of the three times the jaw had moved, or the bite-plate slided, sideways. In such a case, the no-bite would simply have to be re-taken until the case *would* prove. But the *proof* would be unquestionable, when attained.

But we are here granting a very remote probability; for, if this operation is rightly done, it will not fail once in fifty times. Of course, this "rightly" includes receptive instructions and, sometimes, some training of patients.

And here let us lament that dentists generally know so little about methodical suggestion to their patients. (A fourth lecture will be added to this Course on "SCIENTIFIC SUGGESTION IN DENTAL PRACTICE," before long.)

TRANSFER THE NO-BITE TO ARTICULATOR.

Now let us transfer our test-bite onto the articulator. We 'll use a model of the natural lower teeth; preferably a *metal* one. Such can be made of low-fusing metal, in a modeling-compound impression, as readily as of plaster. And the advantage is that the teeth on it won't wear by careless friction like on a plaster one.

The shallow sockets, aforesaid, in our upper bite-rim will be our guide in placing the bite onto the lower model.

If we have no face-bow, or don't know how to use one, or can't find the exact condyle movement, we 'll substitute our always available three-and-a-half-inch measurement - stick.

But if we use the old "plane-line" articulator there 's no danger of getting a bite too far back in its jaws.

We 'll then first place the lower model correctly straight in the articulator on the table with the ends of the teeth at least approximately three and a half inches from the cross-bar, and fasten it there. Then press the bite to place onto this lower model carefully; then the upper model into this, its bite-plate. Then bear down firmly on the *model,* without pressure on the *metal jaw,* while we plaster it all together, in the usual, but more careful, way.

We 'll next change off our bite-plate for a base-plate, onto which the teeth will set.

This base-plate, as shown in the double-set case, should be of the Kerr "Perfection," and pressed onto the model as I have before shown.

Of course, all base-plates must be secured down onto their models before placed into the articulator; and absolutely held so during the sticking of teeth there-on-to. This is done with not less than three little patches of hot modeling

compound of 1/4 inch width, connecting bite-plate and model.

Next, we 'll set the teeth to the lower model, always with an eye on the set-screw. We 'll *first* give them a square "one-way" come-together, and then follow up with the chewing movements of the articulator lower jaw.

And here is the advantage of metal models of the lower teeth over plaster ones: the metal ones won't wear off by the adjusting, frictional, chewing process, in anatomical adjustment.

From this on, the work is the same as shown in the upper one of our double set.

PINK RUBBER AND GUM SECTIONS.

To be honest with my patient, I would use pink rubber, if at all, no higher up than the laugh-test indicates.

When I want to make an extra *nice* set of teeth on vulcanite, I use gum sections of pattern and shade to harmonize with my patient's normal face and her age.

I think harmony may be of even first importance, over the *fit* of artificial teeth. For a plate worn in a hand-bag won't do *both,* disgrace the dentist and disfigure his patient.

I well remember when it was unethical and disgraceful to make a permanent denture of "plain teeth." In fact, gumless teeth have made rubber work so easy, in a manner, as to bring it into disrepute.

BITES IN SCATTERING CASES.

On my rounds among dentists I find quite a good many still taking base-plate rim-bites in partial cases of scattering teeth. In such a case, the best and only bite needed is to make

models of the natural teeth, upper and lower, and place these together properly on the articulator, and exactly as those touched in the mouth. Abrasion of the natural teeth, copied onto the models, will nearly always show how to match the models in the articulator without any other bite. But, in exceptional instances, thin sheets of bite-marked wax will help in the adjustment. Indeed, in many cases, it 's not necessary to even put them in the articulator. Well, indeed, I 've met several fairly successful plate-workers (from the old-way view point) who never use articulators in any case.

PRESSOMETER IN UPPER CASES.

In single upper cases, it is seldom necessary to use the pressometer; only when decided difference in texture at different places is evident. You have been shown its practical use under such circumstances.

But, in any case, the teeth on the wax base-plate should touch their opponents a little bit first over the soft parts, to make up for unequal settling. The exception is where hard parts support adjacent soft ones.

From this on to the finish of our single upper case, we 'll closely follow the demonstration, directions, and precautions given in the upper one of the double set. We 'll sacredly heed the points of special importance in material, flasking, packing, vulcanizing, and the countersign: *Keep an eye on the set-screw, and don't spring the articulator.*

PARTIAL POSTERIOR LOWER BITE.

Here is a case of a partial lower set, where, for instance, the molars, and maybe biscupids,

are lacking; but the front teeth are intact. It is a case wherein even truthful dentists will sometimes—prevaricate, a little. At least, I think so when they tell me they seldom have to grind the teeth off after vulcanizing.

Only those who carefully observe and *get* the proper strain in taking their bite, or in trying the teeth in, can truthfully avoid making the common error of getting the jaw teeth too long —if the tissues under the plate are soft.

And it comes about in this way: They take the bite too hard; that is, the material is too hard, or the pressure on the soft tissues too strong—maybe both. The principle is illustrated in the use of our pressometer. (Page 159).

A short way of stating the fact is this: The patient bit more *into* the flesh than into the material. In the biting, the natural *teeth* didn't give down at all. If the soft tissues under the bite-plate gave *any, then* the finished teeth, when set up to the bite, will, of course, come together just as much too soon as was the difference in the yielding.

Also, at the natural wearing stress of a denture, of course such gums yield *some.* Now, whatever amount they are forced to give *more* than this, by undue strain in taking the *bite,* represents the amount the teeth will have to be shortened.

And since *most* dentists (nearly all) take such impressions, abnormally straining for such tissues, just so many have to after-grind; or else compel their patients to go through an unnecessary, long season of annoying and painful adjustment.

And, of course, just the same results follow undue pressure in trying the teeth, set up on

the base-plate, in the mouth. "Just wear 'em till you get used to 'em."

But it is reversely true that, in such cases of soft tissues, *insufficient* strain on the bite gives lack of proper up-touch of the teeth. So it sometimes happens that, in cases of *too light* pressure in the bite, the artificial teeth are correspondingly too short.

While we can get the pressure almost exactly right, with little trouble, by the use of the pressometer test-slips in clear mouths, we can get it practically so without them in partial cases by my recent compensating discovery.

And this is the way I do it: I first make my bite-plate, preferably of Kerr perfection base-plate material, to fit snugly onto my model. Then stiffen it with annealed brass wire. The soft wire is first bent to the bare model and then warmed and pressed into the now-placed base-plate.

Though this wire is pliable, it is stiff enough to make the base-plate rigid, so it can be removed, off and on, in the preparation and operation.

On this Kerr base I place modeling compound to reach up to the opposing teeth, natural or artificial, above, and to press them a little; then trim off the sides of this bite-rim to rid of surplus.

Then for the bite. The compound, alone, is warmed and the jaws closed on it till the front teeth come properly together. Their coming-together is our guide-stop.

Now, if the bite-rim is softer than the flesh under it, the pressure will not be too strong. But the chances are five-to-one that the material will be too hard at the actual biting instant.

As I rather expect this, I forestall it with a very th ı, soft plaster addition on top of the compound, after first shaving off a little of the latter, to make room for the plaster. The slow setting of the creamy plaster gives ample time for the operation. And the softness of it always provides against overstrain.

But in very soft cases, where the gums are sure to settle a good deal from pressure by wearing a plate, provision must be made for the change. That is, the artificial teeth, when finished, should touch their opponents a little before the front natural ones touch theirs; the *amount* of the *extra* strain being according to the softness of the tissues.

I arrange for this fore-touching of the artificial teeth by placing a sheet, or several sheets, of tin-foil on the ends of the front lower natural teeth, closely adapted, *while* the bite is taken; and then place it onto the model when the artificial teeth are being set up.

The thickness of this provisionary foil-strip depends on the yieldance of the gums to be bitten on. It gives to the rear artificial teeth an extra length *just a small per cent less* than the thickness of the foil. The grain of guess-work about the foil provision is made admissible by the accommodating adaptability of soft tissue. Anyhow, it is practicable enough to bridge over a deep chasm of trouble. (This simple, new solution of a vexing old problem is carefully shown in our verbal Course.)

N. B.—I should have stated timely that I remove at least a part of the modeling-compound-and-plaster-bite from the base-plate foundation, after the case is in the articulator; and then put enough Setting-Up wax on to set the teeth into.

The base-plate itself isn't removed until the flask is opened for packing.

It may not be amiss here to re-mention that in these partial cases the lateral movement of the jaw should be attended to, either on the bite-rim in the mouth or on the articulator. The latter is preferred when the bite on the modeling compound is finished out with the cream-like plaster. Sometimes both are advisable. In fact, such cases indicate our scheme: *Each mouth its own articulator in the finish*—which I will now soon show you in gratitudinal detail; and extremest satisfaction, I hope.

You are all familiar with the use of the carbon and wax strip in after-grinding for occlusion. Well, I 've given you a much preferable way, by which all such grinding is done unknown to the patient, and with utmost accuracy; that is, by taking a short-bite, re-articulating the finished plates, and doing all grinding in the laboratory, out of sight.

But, if only a little touching-up is needed, you can indicate with the Kerr tracing-sticks. Dry the teeth, trace-on a *thin layer,* warm it well, and have patient bite into it. Then remove the particular thin flake where it is bitten through, and grind with small carborundum bulb. Then trace-on more and repeat, biting and grinding, till you get a close-touching occlusion everywhere.

THE NEW COMMON SENSE OCCLUSION.

EVERY MOUTH ITS OWN ARTICULATOR.

Since the publication of this Printed Course in 1910, I have made the most valuable discovery in occlusion ever mentioned, and the most practical invention for carrying it out after secured. And, of course, this introduction will make obsolete some of the ways and means that were advanced thoughts a few years ago; in fact, so*me* I 've just given you.

I here refer especially to the scientific methods of grinding teeth after the plate is vulcanized, to secure technical occlusion.

We have no use for these grinding methods any more, for we have a method for securing final occlusion ("every mouth its own articulator in the finis"), with anatomic perfection, proving it by actual test, and then holding it until the work is finished.

For explanation and illustration:—Doctors:—how often it happens that when you have the most perfect occlusion of teeth in dentures *before* packing, you find you have to grind to correct it after vulcanizing. Every plate maker often has this "luck."

Faulty occlusion may result from several different causes; as incorrect bites and wrong and conflicting pressures in impressions and bites. If you took an impression (in some mouths) at one strain and your bite at a different strain your case would not occlude in the mouth, when "trying your teeth in." And so would an uneven closing of your flask give a similar result. All this you know by experience.

For example: after you set your teeth up on your base-plates in your articulator you take your case off the model and try it in the mouth. Now, why? To *"see"* whether it is right when *in* the mouth. That is to say, you can't trust your bite, or your articulator, and now wish to verify by actual test—which is good common sense.

Well, when your test is satisfactory, are you dead sure you get it back onto the model exactly as it was before? Possibly you strained it a little in replacement, or failed to get it tight down onto the model, if nothing else. If not, well and good.

But, what if you find, in another case, that it does not occlude rightly in the mouth? Then, why not? Because you are trying it in at a different strain on the tissues from what the strain was when you took your impression, or when you took your bite. A conflict of stress throws you off. (How few ever think of this!)

When you correct it in the mouth (of course by the anatomical movements of the jaw), now, how are you to maintain this correction when you put it back onto the model for investment in the flask? Do you see your trouble?

Well, now let us take our bite, verify our occlusion and take our impression all at the *same* strain, and avoid conflict of stresses. It will take a little bit more work and little time, but we 'll save more in the long run. We 'll wind up with just the occlusion we want and avoid all grinding after vulcanizing.

We will take our case off the model, from the articulator, correct it in the mouth anatomically ("every mouth its own articulator in the finis") and take a final plaster impression for occlusal purpose *in the adjusted and occluded case itself;* and produce an occlusal model *in*

place and never take the case off of it until after vulcanizing.

The work is thus: Adjust the set-up and waxed-up teeth to anatomical occlusion by real anatomical movements of the jaws themselves. First as to the up-and-down motion, and then as to the *little* natural lateral motion of the jaw that is used in chewing. (Don't over-do this stunt by exaggerated "lines," "planes" and "paths" for show purposes.)

Your stiff, hard base-plate sticks fast in the mouth and you can thus occlude to teeth with ease and perfection. (If necessary, use gum tragacanth to stick it.) Now, let the patient spit the case out of her mouth carefully, for the sticky wax may be a little soft around the teeth. Use a mouth blowpipe and melt the wax fast to the pins in the teeth and cool the whole thing.

Now, fill it with thin plaster; pour out all the plaster you can; replace a wee-bit in the center (all impressions must scatter from the center) and take her impression, letting patient bite down lightly, and hold it firmly till the remnant in the little porcelain impression bowl is hard; then have her spit it out again. Now, Doctors, don't here forget to scarify the base-plate a little and wet her mouth with olive oil just before taking the impression. Olive oil and glycerine together will prevent adhesion to the tissues.

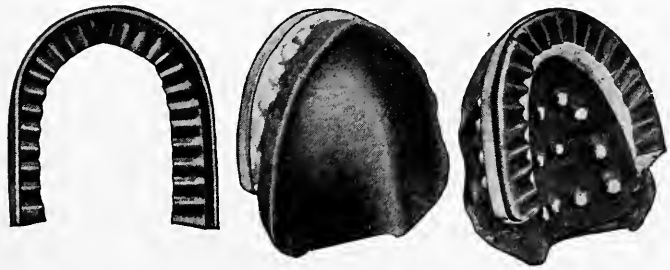
Now, take the impression out carefully, and after it is dry brush on your separating fluid as usual. Now "pour" and make your model (much preferably using the Greene Approximate metal models). Then, when your model is made leave it in the impression and go on and invest as usual. But, Doctors, listen to me: I am now going to tell you something of importance; but will first ask you a question: How often, when you have

the most satisfactory occlusion *in the mouth,* you have to do more or less grinding of teeth in correcting occlusion after vulcanizing.

Every plate maker has this experience because it belongs to and is a part of the old, uncertain way of doing plate work.

Well, if you had perfect occlusion *before* flasking and now it is "off" what has happened? Why, in bringing the sections of your flask together, after packing, the plaster yielded, gave way by compression, and the teeth became misplaced. They were either pushed outward or pushed down into the disintegrated, soft plaster; or, maybe both. And you vulcanize your plate with teeth in misplaced condition. You brought the front part together first (as often must be done) and in bringing the heels together you used more force; so your jaw teeth were pushed down into the plaster the most. The result is that your once good occlusion now strikes first at the heels in the mouth after vulcanizing.

Now, I have invented and constructed a very simple, convenient and cheap method and an appliance for holding teeth in place, *absolutely,* so that you have the precise occlusion after vulcanizing that you had before. This new invention we call ***Greene's Occlusion Retainer.***



Greene Occlusion Retainer.

GREENE'S OCCLUSION RETAINER.

This is a metallic re-inforcing appliance to strengthen plaster, or other investment, and prevent the yielding and displacement of the teeth under flask pressure, during the processes of flasking and vulcanizing. It is a metallic plate of copper sheeting, constructed semi-circle with a perpendicular wall and horizontal floor. It is made adjustable, to be fitted over the ends of the circle of the set-up and waxed-up teeth before double-flasking.

Thus, after you have your case occluded ("tried" and *corrected* in the mouth) and set into the first half of the flask and are ready to double-flask, adjust the retainer over the arc so that each tooth may sit against the floor-angle, or nearly so.

This adjustment is done by springing and bending the horse-shoe-shaped appliance with fingers or pliers. When it is adjusted onto the arc of the teeth take it off and fill it with plaster (jolting out all air bubbles) and slip it back onto the ends of teeth, plastered fast.

Well, now go on and double-flask as usual. When you open the flask you find the ends of the teeth setting down onto the floor and up against the side of the metallic reinforcer and held there irresistibly. No matter how much strain you exert in flasking, your teeth can't yield in the investment. Now, if you had correct occlusion before, you still have it after vulcanizing. With the proper use of Greene's Occlusion Retainer you never need to grind even a cusp after vulcanizing, if correct before.

And, Doctors, you often have your plate to come out much thicker than your base-plate. This may be caused by the compressing of the arch of your plaster investment, under heat

moisture and pressure. To reinforce this I have invented a metallic arch to be placed onto the palatal part of the base-plate before double-flasking. By the use of this little device plates come out the same thickness of the base plates; so no scraping is needed; none allowed in Greene's system. Scraping on one side of a vulcanite plate, and not the other, causes weakness and liability to warp and break.

FULL DOUBLE SET.

In case of full sets (two dentures) you go on and do just as I have told you up to the point of taking the plaster (occlusal) impression ("pass-word method"). In case of double sets you needn't use the occlusal in the upper set. We don't use the plaster to improve the fit of the plate, but to maintain the occlusion only.

When you make both plates just go on and vulcanize the upper on the original model, after verifying occlusion in the mouth. When finished then re-test the lower to it. Then take plaster (occlusal) impression in the lower, biting it up against the finished upper set, just as I have described the taking of it for a lone upper case.

I will repeat: the taking of the plaster impression in the case is not to improve the fit of the plate to the mouth; that has been guaranteed by your first advance "test" impression. But it is to secure occlusion *at proper strain,* and maintain it against change, to the finish. However, if you finish the two plates together then better use the plaster occlusal in both sets, as described. But it 's best to occlude the lower teeth in wax to those in the vulcanized plate above.

The plaster in the lower case will furnish an occlusal model in its exact, right relation; and the Occlusion Retainer will hold every tooth into

its place in its investment while packing and vulcanizing.

COMMON SENSE OCCLUSION SHOWN IN MOUTH.

Class asks that I review this and show it in my own mouth. I 'm glad to do it; as it 's my last "discovery" and best stunt in the whole bite and occlusion business.

Well, I 'll begin anew and take, for instance, a "test" modeling compound impression (Kerr-Perfection) as shown in our first lecture lesson. (Could take it in plaster by the pass-word method, but no need of it.)

But, now, I 'll first take a modeling compound impression of my lower natural teeth and pour a model, to be hardening while I take my upper impression.

Next I 'll take my upper and make a plaster model on it. And on this plaster model I 'll make me a Kerr Perfection, or a swaged metal base-plate, as I 've already described. Make it *fit.*

Now I 'll take my close-range no-bite as you have already been shown. And to hurry up matters I'll take my no-bite in Kerr Setting-Up wax, well fastened onto my base-plate. And I 'll not forget to strengthen my base-plate across at its rear with a little wire heated onto it.

I 'll now articulate my case here in my anatomically improved Old-Line "approximator." It has all the movement I need, since its convertion. This will give me a close occlusion as ever secured in any old way.

But, see here, doctors, I may have, in my semi-soft mouth, taken my impression and my bite-pressure and my mouth-itself occlusion at varying stresses. I 'll do away with all conflicting strain and take 'em all at the same exact strain, *all at one time,* in a new plaster impression.

I 'll take the case off of the model, in the articulator; put it into my mouth and anatomically readjust the upper teeth to my lower natural ones.

While the case, waxed-up, will, as a whole be cool and rigid, the teeth thereon, themselves, will be slightly warmer so as to give a little in their wax environment.

I 'll slip the case into my mouth and bring my jaws together by a no-bite. I 'll finger-pull the teeth down onto my natural lower ones *all round* till they all touch the way I want them, while at the same time I 'll bite up lightly.

Now all are together, perpendicularly. I 'll hold them so and "side-wiggle" and sheep-chew (lateral motion), a little.

Next I 'll spit the case out of my mouth and most carefully mouth-blow-pipe the Setting-Up wax to the pins of the teeth. *This is natural anatomical occlusion.*

Next I 'll cool it all and scarify the roof of my base-plate a little. And I 'll olive-oil my mouth a little; and take a *thin* occlusal-plaster impression (pass-word way), in my adjusted case.

I 'll wait till the indicating remnant of plaster in my little earthen bowl is *hard;* and then spit it out again. Then, careful not to touch the waxed teeth, for fear I might displace them, I'll cool the case and plaster on my Occlusion Retainer, without blubbers.

Now, after my plaster impression is dry, I 'll varnish with separating fluid; then soap-stone-dust it with soft brush and therein make my final model; of course, this time preferably using the Greene ready-made approximate.

Now, doctors, you see I 've taken my impression, my bite and my occlusion pressures all at

same *stress; all at once.* So there can be no conflict in them.

Now I 'll set my case in the first half of the flask, seeing there is but little, if any, plaster under it, to disintegrate and change. And then go on and finish double=flasking, as usual. And I 'll go on and pack, and vulcanzie always at lowest temperature, and cool off slowly.

The metal model will prevent any change in my plate. The Occlusion Retainer will prevent any displacement and change in the teeth in their embedment.

And by vulcanizing at low temperature and cooling off slowly, I 'll not have to grind=touch even a cusp after vulcanizing; not once in a hundred times. Nor in fact did I grind any in occluding. I have the smooth, sharp, definite ends and cusps, as made and burned onto my front teeth and grinders. And I need them since my lower teeth are flatly abraded down from 76 years grateful servitude.

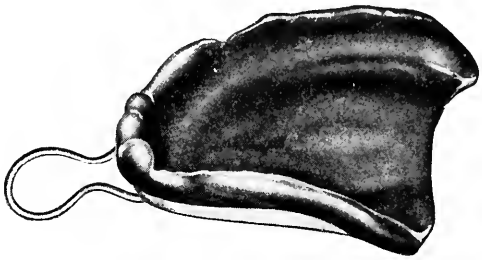
Well, now, doctors, if I' ve used the Greene=Roof Re=enforcer to prevent my vulcanite plate from coming out thicker than my base=plate (Kerr's is the proper thickness) I 'll have no after=scraping to do.

No filing, no grinding, no scraping by the Greene system of plate=work.

And, now doctors, one and all, commit to memory this Greene=System pass=word:

A DENTAL PROSTHESIS, IN WHICH EACH successive step of importance is absolutely tested in advance; and then carried out by various mechanical means invented for the purpose.

KERR PERFECTION IMPRESSION COMPOUND



Test impression taken by Dr. J. W. Greene of his own mouth in Kerr Perfection Impression Compound, showing complete muscle trimming.

A plate from it would be a minute duplicate, without any further trimming.

KERR SEPARATING FLUID

This fluid separates plaster of paris with such facility that a single trial will convince the most critical of its unequaled superiority. It will not harden if bottle is left open and the brush remains soft; made in two colors. White for Orthodontists, and red that turns purple for general work.

Plaster separating fluid for plaster paris casts is not excelled when used on either damp or dry plaster.

It is unlike any of the separating fluids on the market because it does not take up any space, as will a coating of shellac or sandarac varnish, therefore gives a more perfect model and reproduction.

It can be used to paint on models for bridge work to keep the wax from sticking to plaster model where you wish to remove same.

DIRECTIONS

Paint over plaster with small brush thoroughly, care not necessary, only cover all parts; let stand 2 minutes, then hold under strong stream of cold water, blow off surplus water and proceed as usual to pour plaster. If it becomes too thick, thin with cold water.

GREENE·BROTHERS' PRINTED COURSE IN PLATE WORK

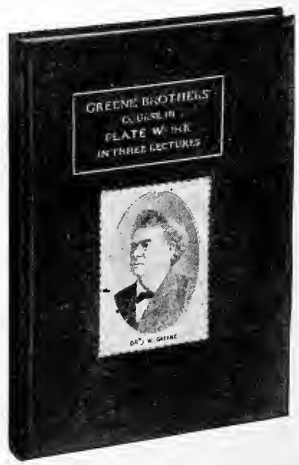
Copyrighted July 12, 1910

The first book on new and Advanced Test Methods in impressions using Kerr Perfection Compound; also Articulation, Occlusion, Roofless Dentures, Refits and Renewals.

This printed course of 220 pages, by Dr. J. W. Greene, offers you more common-sense information about practical plate work than has ever before been presented in book form.

A book written from a practical standpoint, is full of unique methods and usefull information gathered from years of successful experience as a plate worker.

It contains valuable data relative to taking both upper and lower, full and partial impressions that is of vital interest to anyone engaged in the practice of dentistry.



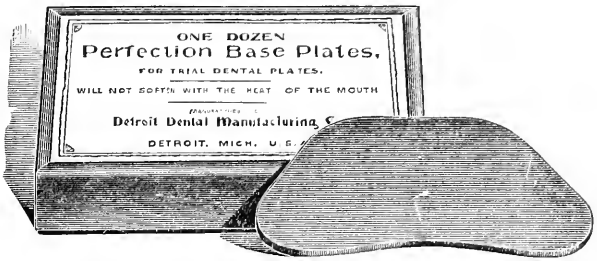
Manufactured by the

Detroit Dental Manufacturing Company

Detroit, Mich., U. S. A.

KERR PERFECTION BASE PLATES

For Trial Plates.


ONE DOZEN
Perfection Base Plates,
FOR TRIAL DENTAL PLATES.
WILL NOT SOFTEN WITH THE HEAT OF THE MOUTH
Detroit Dental Manufacturing C
DETROIT, MICH. U. S.

A thin, rigid base plate that will not soften or bend with the heat of the mouth, making it invaluable in prosthetic operations.

In vulcanite work one base plate will last for all the necessary operations, such as taking the bite, setting up the teeth, mouth occluding, etc., etc.

Directions.

Although dry heat may be used to soften for adaptation to the model, the best results are obtained by placing both the cast and the base plate in water as hot as the hand will bear and gradually working down to the model. Then trim excess, with scissors and glaze sharp edges over a burner and cool.

KERR SETTING UP WAX

KERR
SETTING UP WAX
A Special Wax in Stick form for setting up
and adjusting the teeth on the base plate
Manufactured by
Detroit Dental Mfg. Co.
20-22 Milwaukee Ave. W
Detroit, Mich. U. S. A.

A special wax for use in setting up and adjusting the teeth on the Base Plate or try in Plate.

A wax that will hold the teeth from coming loose when they are slightly warmed for making the final adjustment in the mouth itself where such adjustment is desired.

The color being a close imitation of the mucous membrane aids greatly in making the proper selection of teeth.

An excellent wax for taking the bite.

Put up in sticks of convenient size but if a thicker stick is desired the sides of two can be warmed and stuck together.

Can be softened in warm water or over flame.

Manufactured by

Detroit Dental Manufacturing Company

Detroit, Mich., U. S. A.

KERR PERFECTION IMPRESSION COMPOUND

Softens Easily—Hardens Quickly

It is Impossible to Make Good Work With a Poor Impression.

KERR PERFECTION IMPRESSION COMPOUND takes a clean cut, sharp impression, showing every detail with accuracy. Softens at a low temperature. It hardens quickly and evenly in the mouth, becoming very hard, and does not warp or creep. A perfectly fitting plate can be made from a Perfection Impression where other means have failed.

A scientifically correct impression of the mouth by the Greene System of new and advance-test methods for correctable impression can be made only by using Kerr Perfection Impression Compound.

(Dr. J. W. Greene has used this material exclusively in all his clinic impression-work, for 15 years.)

Manufactured by the

Detroit Dental Manufacturing Company

DETROIT, MICH., U. S. A.

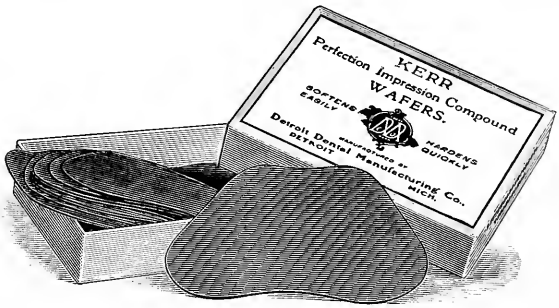
Kerr Perfection Impression Compound Sticks

Are very convenient when it is necessary to add a small quantity of material to an impression, and other uses.

The end of a stick can be softened or melted over a flame and quickly and accurately traced on where wanted.

(Suggested by Dr. J. W. Greene.)

Kerr Perfection Impression Compound Wafers



Are thin sheets about the thickness of light cardboard.

Can be softened quickly over a flame and spread over a surface to add slightly to its thickness.

Will be found very convenient for a temporary refit of the roof and ridge of a plate.

(Suggested by Dr. J. W. Greene, for various uses.)

Manufactured by the

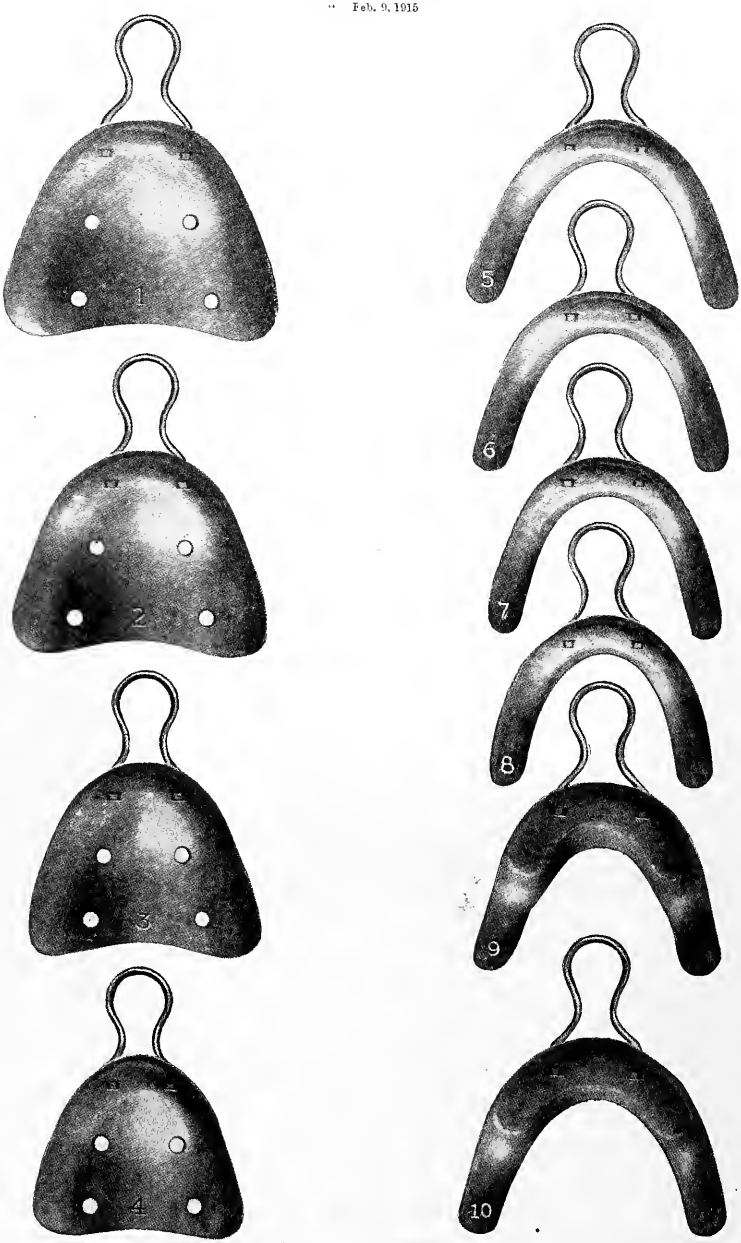
Detroit Dental Manufacturing Company

Detroit, Mich., U. S. A.

Greene-Kerr Flexible Impression and Bite Trays with Removable Handles

As used iu Dr. Greene's Test Methods for Taking Impressions

Patented March 14, 1911
" Feb. 9, 1915



Manufactured by

DETROIT DENTAL MFG. CO. **DETROIT, MICH., U. S. A.**

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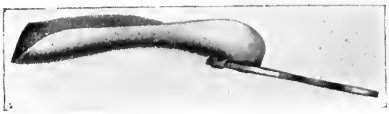
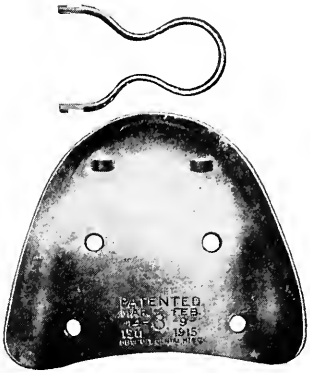


Showing side view of Tray



Showing removable Handle

Showing an upper and lower tray in test-bite with modeling compound impression

These trays are made of thin flexible metal with lower rim, shorter in length and shallower than the finished plate is to be so that the metal does not strain on the lip and cheek tissues or back palate.

They are so shaped that they require a minimum amount of change. This change can be readily made by trimming or bending.

The handle can be quickly removed for muscle-trimming and to show how impression fills out the lip and cheeks; reinsert handle for removal.

The trays are specially designed for taking impressions with Kerr Perfection Impression Compound by the Greene System.

Assorted as follows, unless otherwise specified one each size from No. 1 to No. 10 with one extra No. 2 and No. 3 uppers.

Manufactured by

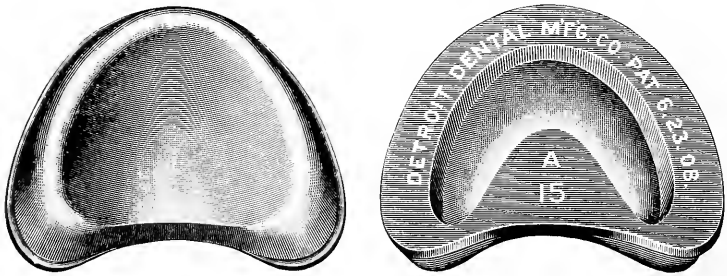
DETROIT DENTAL MFG. CO. **DETROIT, MICH., U. S. A.**

THE GREENE READY-MADE, NON-CHANGEABLE APPROXIMATE MODELS

For Vulcanite and Celluloid Work, and Swaging.

Invented by Dr. J. W. Greene.

Patented June 13, 1908.



Doctor: Doesn't it frequently, if not *often*, happen that with even a "good impression you have a badly fitting "denture"?

Do you know how this mostly happens? You'll probably answer: "My impression changed before I poured my model, or, maybe, my model changed before I used it."

These things may have occurred, but nine chances to one they did not. Your trouble far more probably came from change that took place in your plaster model in flasking and vulcanizing; or in squeezing, if a celluloid case.

Why, even the very best of plaster models are liable to change shape under heat, moisture, and pressure. And faulty ones are sure to do it.

In fact, most plaster disintegrates at about 300° F. So you nearly always vulcanize on a soft-surfaced model, and often on one really mushy throughout.

In such cases you depend on environment to hold your mush in shape. But if your pressure in flasking is heavy, or undue in any direction, your soft plaster model will yield, and your plate will differ in shape from your impression of the mouth.

The remedy is

THE GREENE READY-MADE NON-CHANGEABLE MODEL SYSTEM.

These models are made of cast Aluminum, 100 different shapes in a set—87 uppers and 13 lowers.

The uppers are of seven different sizes, numbered from 14 to 20, these sizes grading one-eighth of an inch in difference in width. Then in each *size* there is an average of a dozen different *shapes* to conform to as many different styles of mouths and gums—as deep, shallow, thick, thin, broad, narrow, etc. These shapes are lettered.

With these 100 full patterns any normal case can be accommodated.

The models cannot break, bend, wear out, nor get out of order; but may be used over and again indefinitely.

The full set is put up in a neat case, with a special compartment for each shape, numbered and lettered.

HOW TO SELECT, FIT AND USE THEM.

Take your impression as usual; or *better,* by the Greene method, using Kerr Perfection Impression (which gives you the exact height of rim and length of intended plate, and an absolute advance *test* as to its fitting). Now measure across the back of your impression, from outside to outside of tuberosities, to get its *size* and *number.* For instance: two inches wide would be the width of No. 16.

Select from model No. 15, which is one-eighth of an inch narrower than No. 16, the nearest the shape of the impression.

This selected model should slip loosely down into the impression. If it lacks a little of going in, use Carbon paper to indicate and find the places, and file or scrape the model off to let it in with, say, an eighth of an inch play; less will do.

After your model will drop into the impression readily, it is fitted. Then mix your plaster (good plaster), smear your model all over its face-surface carefully; then pour a little plaster into the impression, fullest in the center, and push the besmeared model down into it, and go on and finish as if model were all plaster.

You now have a model about 90 per cent metal, in bulk, with 10 per cent or less of plaster veneering over its face. The metal will not change at all, while the very thin coating of plaster facing (being supported by metal) cannot change perceptibly.

Nor does it take much longer to make this non-changeable cast than the old, faulty, all-plaster sort. Go on and use it the same as if all plaster, in vulcanite or celluloid work.

In using these approximate models for *partial* cases, first fill the tooth sockets in the impression. If in removing the impression from the model you should break off a tooth, just cement it back to its place with thin cement, which makes it stronger than before broken.

TO SEPARATE IMPRESSION FROM MODEL.

Remove the impression *from the model,* rather than model from impression. First remove the metal tray from impression, by warming the metal over spirit flame. If impression is modeling compound (Perfection Impression Material), or wax, first warm the *impression* gently in shallow water, leaving the model as cool as possible, and peel the former off from the latter.

FOR SWAGING.

To complete them for swaging, use a half-and-half mixture of Portland cement and plaster, well ground together in a mortar, before wetting.

And to swage on them when the new process methods of pressure are used, first "cow-horn" your blank plate over a metal model of the next size *larger* than the one you are going to finally swage to.

If you use the Greene method of taking impressions, you can swage turn the very utmost rim edge of your plate, to fit the muscles to such exactness as to need no trimming after plate is worn, unless the mouth changes.

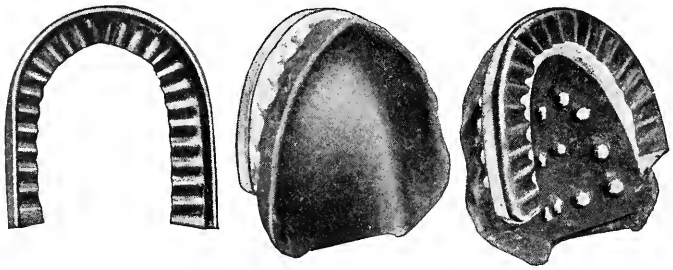
Manufactured by

DETROIT DENTAL MANUFACTURING CO.,

DETROIT, MICH., U. S. A.

GREENE'S OCCLUSION RETAINERS

PATENTED NOV. 4, 1913



A flexible metallic semi-circle re-inforcing appliance with perpendicular wall and horizontal floor.

To be fitted over the ends of the set up and waxed up teeth before double flashing to strengthen plaster or other investment, and prevent the yielding and displacement of the teeth under flask pressure during the process of flasking and vulcanizing.

Most valuable in Gum-Section Cases.

After you have case set into first half of flask and ready to double flask, adjust the retainer over the arch so that each tooth may set against the floor angle or nearly so.

When adjusted to fit arch of teeth, fill it with plaster, jolt out air bubbles and slip it onto them and finish flasking as usual.

GREENE SPOUT CUP

Designed especially for pouring hot water into a modeling compound impression when reheating is necessary. The small spout gives a fine stream which is very essential.

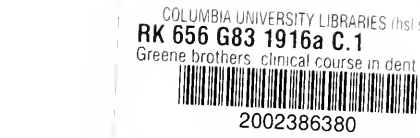
Capacity about half pint.

Manufactured by the

Detroit Dental Manufacturing Company

Detroit, Mich., U. S. A.

RK656 G83
Greene 1916a
Dental Prosthesis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